



March 30, 2018
(revised January 22, 2019)

Reference No. 013932-151

Mr. Brett McDaniel
Remedial Project Manager
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Dear Mr. McDaniel:

**Re: Effectiveness Report - 2017
20th Street Groundwater Treatment Facility
52nd Street Superfund Site Operable Unit 2 Area
Phoenix, Arizona**

In accordance with Paragraph 9.2 of the Statement of Work (SOW) attached to the Second Amended Unilateral Administrative Order 98-15, as modified by the United States Environmental Protection Agency (EPA) letter of August 21, 2001, and in accordance with the requirements of Article 11 Paragraph 23 to the Consent Decree (CD) (filed July 13, 2010 in Federal District Court) and Paragraph 5 of the SOW, included as Appendix B of the CD, for the Interim Remedial Action between the Arizona Department of Environmental Quality (ADEQ), and on behalf of Honeywell International Inc. (Honeywell) and NXP USA, Inc. (NXP) (formerly Freescale Semiconductor, Inc.) (collectively the Companies), GHD Services Inc. (GHD) hereby submits two hardcopies and two electronic copies (included in the back of each hardcopy) of the Effectiveness Report - 2017 for the 20th Street Groundwater Treatment Facility, 52nd Street Superfund Site Operable Unit 2 (OU2) Area, Phoenix, Arizona.

The 2017 Effectiveness Report provides the effectiveness evaluation for the 20th Street Groundwater Treatment Facility for the period of January 1 through December 31, 2017, and includes the September 2001 baseline data to facilitate a comparison to pre startup conditions, as well as the September 2006 data when an expanded monitoring well network was available. The 2017 Operation & Maintenance activities for the 20th Street Groundwater Treatment Facility proceeded with no significant problems. The discharged water has always met all discharge standards for volatile organic compounds.

As noted in the recommendations, the Companies are preparing a proposed plan to provide a long-term response for the central portion of the Site that will also help mitigate any potential future impact to OU3. The Companies propose to schedule a conference call with the Agencies, when they become available, to discuss the proposed plan.

Please feel free to call the undersigned at (602) 216-7200 if you have any questions.



Sincerely,

GHD

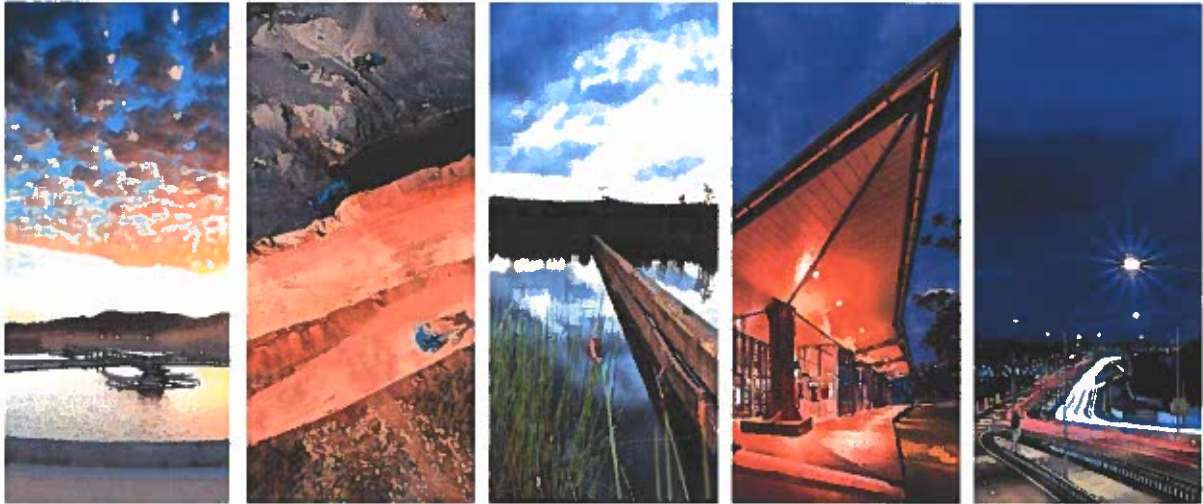
A handwritten signature in blue ink, appearing to read "Manfred Plaschke", with a long horizontal flourish extending to the right.

Manfred Plaschke, R.G.

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Encl.

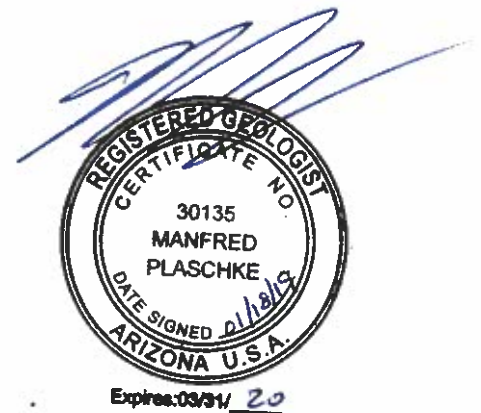
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 OU2 Facility Site Copy (hardcopy)



Effectiveness Report - 2017

20th Street Groundwater Treatment Facility
52nd Street Superfund Site
Operable Unit 2 Area
Phoenix, Arizona

NXP USA, Inc.
Honeywell International Inc.





Executive Summary

The 52nd Street Superfund Site Operable Unit (OU) 2 Area groundwater remediation system located in Phoenix, Arizona consists of three groundwater extraction wells and a centralized treatment facility (the 20th Street Groundwater Treatment Facility) for removing volatile organic compounds (VOCs) (primarily trichloroethylene [TCE], tetrachloroethylene, 1,1,1-trichloroethane, and associated degradation products) from the extracted groundwater. Remediation system startup activities commenced in September 2001 and routine operations began in December 2001. This report evaluates the effectiveness of the 2017 OU2 Area operations with respect to the September 2001 Baseline Conditions and September 2006 (Second Baseline) Conditions. This report also presents results of water quality samples and water level measurements collected from June through December 2017, and a summary of operation and maintenance (O&M) activities from July through December 2017.

The objectives of the OU2 Area groundwater extraction system (GES), as set forth in the OU2 Record of Decision, are: 1) to contain the north-south width and depth of the observed VOC plume in groundwater in the area of Interstate-10 (I-10); 2) to treat the extracted groundwater prior to its beneficial end use; and 3) to reduce the VOC concentrations in the groundwater.

The extent of hydraulic containment resulting from continued operation of the OU2 GES was evaluated using multiple lines of evidence based on observed water level and water quality data and data trends, as well as system operations and the hydrogeologic setting. The containment evaluation presented herein indicates that the OU2 GES is effective at containing the groundwater plume in both alluvial aquifer subunits in the northern portion of the OU2 Area near I-10; however, the extent of capture is not interpreted to extend across the southern plume boundary as summarized below.

- The volume of water extracted from the OU2 GES exceeds the calculated natural flux of water through the plume area plus the additional safety factor recommended by EPA. However, the capture zone created by the OU2 extraction wells is no longer aligned with the center of the OU2 plume due to the reduction of plume width to the north. Because the plume centerline has shifted, a portion of the extracted water is being collected from an area north of the plume boundary rather than from the observed extent of impacted water.
- The maximum calculated capture zone width upgradient of the OU2 GES exceeds the calculated average plume width for the Salt River Gravel (SRG) and Basin Fill (BF). However, the observed capture zone created by the OU2 extraction wells is no longer aligned in the center of the OU2 plume, and therefore, the calculated width would be similarly off-set to the north and would not extend to the observed southern plume boundary due to a number of hydrogeologic factors outlined herein.
- Using information obtained from the expanded OU2 monitoring network, potentiometric surface maps were prepared for the SRG and BF subunits for September 2017. Groundwater elevation contours were also plotted in cross-sections. The plan view and cross-section groundwater elevation contours demonstrate that the OU2 Area GES is effective at containing the plume in the northern portion of the OU2 Area near I-10; however, hydraulic capture may not be



complete in the central portion of the Site and the southern extent of the capture zone is not projected to extend across the southern plume boundary.

- A comparison of the Baseline (September 2001), Second Baseline (September 2006), and 2016 to 2017 groundwater concentrations shows VOC concentrations continuing to decline in most of the OU2 Area groundwater monitoring well network wells. The TCE plume width continues to decrease to the north of the OU2 Area GES, reflecting complete hydraulic containment of the northern portion of the plume.
- Statistically significant decreasing VOC concentration trends (95 percent confidence) are observed in monitoring wells completed in the SRG and BF downgradient of the OU2 Area GES, supporting the interpretation that the OU2 GES has been effective at capturing mass historically and that the interim OU2 remedy is having a beneficial effect on alluvial aquifer water quality. However, recent VOC concentration trends in select downgradient monitoring wells in the southern OU2 Area suggest that full containment may not exist in the central portion of the Site in the vicinity of the Airport Ridge and across the southern plume boundary.
- -The Companies have implemented short-term contingent remedial actions utilizing in-situ chemical oxidation in the central and southern portions of the Site and are developing a plan for long-term response for the central portion of the Site.
- The Companies are preparing a proposed plan to provide a long-term response for the central portion of the Site that will also help mitigate any potential future impact to OU3.

In 2017, approximately 568 million gallons (1,743 acre-feet) of water were treated at OU2 and put to beneficial use. From startup in 2001 through 2017, over 16 billion gallons (49,164 acre-feet) of water have been treated at OU2 and put to beneficial use for irrigation purposes by Salt River Project. All of the treated water met all of the discharge water quality standards for VOCs during 2017, consistent with every year of GES operation. The OU2 Area GES removed approximately 197 pounds of VOCs in 2017 (0.35 pounds per million gallons), and has removed an estimated total of 15,124 pounds of VOCs since startup (0.94 pounds per million gallons).

The 2017 O&M of the 20th Street Groundwater Treatment Facility proceeded with no significant problems. The system is operating as intended and is expected to continue to perform as required by the Consent Decree. Monthly operational efficiencies of the OU2 Area GES have consistently been in the upper 90th percentile range from startup of the system in September 2001 to the present.



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List of Acronyms

ADEQ	Arizona Department of Environmental Quality
Agencies	ADEQ and EPA
AZPDES	Arizona Pollution Discharge Elimination System
BF	Basin Fill
bgs	below ground surface
BWWW	backwash wastewater
CaCO ₃	calcium carbonate
°C	degrees Celsius
Calgon	Calgon Carbon Corporation
CCA	Clear Creek Associates
CD	Consent Decree
cis-1,2-DCE	cis 1,2 Dichloroethene
COC	contaminant of concern
Companies	Honeywell International Inc. and NXP USA, Inc.
COP	City of Phoenix
CRA	Conestoga-Rovers & Associates
CSM	Conceptual Site Model
D&M	Dames & Moore
EMA	Errol L. Montgomery & Associates Inc.
EPA	United States Environmental Protection Agency
EWM	middle extraction well
EWN	north extraction well
EWS	south extraction well
Evoqua	Evoqua Water Technologies LLC
FCV	flow control valve
ft	feet or foot
ft/day	feet or foot per day
ft/ft	feet or foot per foot
ft/min	feet or foot per minute
ft ²	square feet
ft ³ /day	cubic feet per day



GAC	granular activated carbon
GES	Groundwater Extraction System
GHD	GHD Services Inc.
gpd	gallon(s) per day
gpm	gallon(s) per minute
HSU	Hydrostratigraphic Unit
I-10	Interstate 10
K	hydraulic conductivity
LAU	lower conglomerate unit (or lower alluvial unit)
LI	Langelier Index
MAU	middle alluvial unit
MCL	maximum contaminant level
mg/L	milligram(s) per liter
OU	Operable Unit
O&M	Operation and Maintenance
PCE	Tetrachloroethylene
PLC	Programmable Logic Controller
Q	estimated natural flow rate
ROD	Record of Decision
SCADA	Supervisory Control and Data Acquisition
Siemens	Siemens Water Technologies
SOW	Statement of Work
SRG	Salt River Gravel
SRP	Salt River Project
TCE	Trichloroethylene
TCZ	target capture zone
UAO	Unilateral Administrative Order
UAU	upper alluvial unit
µg/L	microgram(s) per liter
UV	ultraviolet
VOC	volatile organic compound
VSD	variable speed drive



WSRV	West Salt River Valley
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,1,1-TCA	1,1,1-trichloroethane



1. Introduction

1.1 Purpose and Report Organization

This 2017 Effectiveness Report documents the operation, maintenance, and monitoring activities for the period from January 1, 2017 to December 31, 2017, for the Operable Unit (OU) 2 Area Groundwater Extraction System (GES) of the 52nd Street Superfund Site (Site) interim OU2 Area remedy in Phoenix, Arizona. This report has been prepared by GHD Services Inc. (GHD)¹ on behalf of Honeywell International Inc. and NXP USA, Inc. (NXP, formerly Freescale Semiconductor, Inc.) (collectively, the Companies), in accordance with the requirements of Article 11 Paragraph 23 of the Consent Decree (CD) (filed July 13, 2010 in Federal District Court) and Paragraph 5 of the Statement of Work (SOW) included as Appendix B of the CD for the Interim Remedial Action between the Arizona Department of Environmental Quality (ADEQ) and the Companies for the continued operation of the OU2 GES.

This is the sixteenth annual effectiveness report prepared during the OU2 Area GES operation and maintenance (O&M) period. The purpose of the report is to document the effectiveness of the OU2 Area groundwater extraction and treatment system and to demonstrate plume containment using multiple lines of evidence. Previous operation and/or effectiveness reports were submitted to ADEQ and the United States Environmental Protection Agency (EPA) (collectively, the Agencies) as follows:

1. The startup period from September 2001 to December 2001 is documented in the Startup Report (Conestoga-Rovers & Associates [CRA], 2002a)
2. The fifteen previous annual effectiveness evaluations for 2002 through 2016 are documented in the Effectiveness Reports (CRA, 2003, 2004a, 2005, 2006, 2007, 2008, 2009a, 2010a, 2011b, 2012, 2013, 2014a, and 2015; and GHD 2016 and 2017a).

The 2017 Effectiveness Report is organized as follows:

1. Section 1.0 presents the purpose and organization of the report, the background of the project, a brief description of the OU2 Area groundwater extraction and treatment system, a summary of the 20th Street Groundwater Treatment Facility construction, commissioning and startup activities, and the requirements for the annual effectiveness reporting.
2. Section 2.0 presents an overview of the OU2 Area conceptual site model (CSM), including geology and hydrogeology and GES layout.
3. Section 3.0 presents an OU2 Area groundwater evaluation comparing Baseline Conditions (September 2001) to September 2017, September 2006 (Second Baseline) to September 2017, and September 2016 to September 2017, including a hydraulic containment analysis.
4. Section 4.0 presents a summary of the 20th Street Groundwater Treatment Facility operations and operational assessment and evaluation.

¹ Note that Conestoga-Rovers & Associates (CRA) changed its name to GHD Services Inc. on July 1, 2015.



5. Section 5.0 presents a summary of the maintenance work and repairs related to the OU2 Area groundwater extraction and treatment system.
6. Section 6.0 presents the summary and conclusions for the continued operation of the OU2 Area groundwater extraction and treatment system.
7. Section 7.0 presents the recommendations for activities for the following year.
8. Section 8.0 presents a list of references used in this report.

1.2 System Objectives

In accordance with the OU2 Record of Decision (ROD), the OU2 Area GES is designed to fully contain the north-south width and depth of volatile organic compound (VOC)-impacted groundwater observed in the area of Interstate 10 (I-10). A secondary objective set forth in the ROD is to reduce contaminant concentrations in the alluvial aquifer upgradient of the extraction wells. Hydraulic containment is maintained by pumping three extraction wells that lower the groundwater table to create a “cone of depression.” This cone of depression creates a north-south oriented parabolic-shaped hydraulic capture zone. All groundwater located upgradient of, and within the capture zone, will eventually be captured by the extraction wells. The extracted groundwater is treated to remove VOCs and to meet the discharge standards specified in Section 1.3.2 of the O&M Manual (CRA, 2004b; 2011a) prior to discharge to the Grand Canal (see Section 4.5).

1.3 Background

The interim OU2 Area remedy consists of three groundwater extraction wells and a central treatment facility (the 20th Street Groundwater Treatment Facility) for removing VOCs, primarily trichloroethylene (TCE), tetrachloroethylene (PCE), 1,1,1-trichloroethane, and associated degradation products from the extracted groundwater. The treated groundwater is provided to Salt River Project (SRP) for beneficial re-use.

The OU2 Area is bounded approximately by Roosevelt Street on the north, Buckeye Road on the south, the OU1 Area groundwater capture zone (approximately 46th Street) on the east, and 18th Street on the west, as shown on **Figure 1.1**. The agency-approved groundwater monitoring well network for demonstrating capture is shown on **Figure 1.2**, and is discussed in more detail in Section 3.0. Additionally, the OU1 Area groundwater remedy has been operational since 1992 and captures VOC-impacted groundwater upgradient of the OU2 GES (Clear Creek Associates [CCA], 2017).

1.3.1 System Startup

After completion of construction and commissioning activities, the startup period for the 20th Street Groundwater Treatment Facility commenced on September 26, 2001, with the initiation of 24-hour operation of the entire system (including the ultraviolet [UV] oxidation system and all nine pairs of granular activated carbon [GAC] adsorbers) by CRA (now known as GHD), on behalf of the Companies. Startup activities were completed and routine operations initiated on December 13, 2001. The Companies submitted notification of completion of startup activities and



initiation of routine operations to the EPA in a letter dated December 13, 2001. Details of the startup activities are provided in the January 11, 2002 Startup Report (CRA, 2002a).

1.3.2 Operation and Maintenance

In a letter to the EPA dated November 13, 2001, the Companies selected CRA as the supervising contractor for the O&M of the 20th Street Groundwater Treatment Facility. CRA prepared and submitted the O&M Manual to the EPA on January 25, 2002, in accordance with the Amended Unilateral Administrative Order (UAO), which was approved by the EPA in 2003 (EPA, 2003). The O&M Manual was revised in July 2004 to reflect the operational and monitoring changes, and the updated O&M Manual (CRA, 2004b) was approved by the EPA in August 2004 (EPA, 2004). The UAO was terminated and replaced with the ADEQ CD in January 2011 and the O&M Manual was revised in February 2011 to be consistent with the ADEQ CD, and to reflect the operational and monitoring changes since 2004 (CRA, 2011a).

1.3.3 Description of Groundwater Extraction and Treatment System

The 20th Street Groundwater Treatment Facility was constructed with the following major components:

1. Three groundwater extraction wells identified as:
 - North extraction well (EWN)
 - Middle extraction well (EWM)
 - South extraction well (EWS)
2. Below-ground extracted groundwater force main from the extraction wells to the treatment facility.
3. Central treatment facility with granular aqueous phase carbon adsorption (and UV oxidation, if required).
4. Below-ground treated water force main from the treatment facility to the surface water discharge into the SRP Grand Canal.

The extraction well pumps are sized to pump the groundwater from the extraction wells, through the treatment facility, and then to the SRP Grand Canal discharge point, without the need for interim storage and pumping facilities. The table below identifies features of the extraction wells.

Groundwater Extraction Well	Well Depth (feet below ground surface [ft bgs])	Extraction Pump Type	Pump Intake Depth (ft bgs)
EWN	240	Line Shaft Turbine	222
EWM	226	Line Shaft Turbine	197
EWS	214	Submersible	185

The operation of the extraction, treatment, and discharge systems is controlled by programmable logic controllers (PLCs) to allow automation of the system under normal operating conditions, to



shut down the system or portions of the system based on predetermined operational parameters, and to start up the system based on predetermined operational parameters.

The treatment system is designed with fail-safe features, including high water level sensors, motor overload sensors, and a high force main pressure switch that shuts down the treatment system, if required. A local alarm system indicates unusual system conditions to operations personnel. During unstaffed shifts, an automatic telephone dialer system provides a remote indication of conditions that require immediate attention.

The main PLC is housed in the electrical room of the treatment building, and is connected to a Supervisory Control and Data Acquisition (SCADA) system in the office of the treatment building. The purpose of the main PLC is to provide a visual control interface, and for trending and automatic logging of data at the treatment building. All control status, system monitoring, and alarms are displayed on the SCADA system. In addition, operational data are logged on the SCADA system to allow evaluation of system performance, and to generate data for reporting requirements. In case of a PLC failure, hardwired interlocks of major alarms will shut down the treatment system.

Details of the OU2 Area groundwater extraction and treatment system are provided in the O&M Manual (CRA, 2004b), revised in 2011 (CRA, 2011a).

1.4 Effectiveness Evaluation Requirements

This report was prepared to meet the requirements of the CD as described below. The CD was filed in Federal Court on July 13, 2010, and became effective on January 14, 2011, when EPA terminated the UAO (EPA, 2011).

The CD requires annual effectiveness reports be prepared for each year of operation of the 20th Street Groundwater Treatment Facility.

Article XI. Paragraph 23 of the CD states the following:

"Unless ADEQ and the Working Party Settling Defendants agree to different dates, on or before March 31st of each year, Work Party Settling Defendants shall submit an Effectiveness Report for the period October 1 through September 30 in accordance with Section 5 of the SOW. Settling Defendants shall review the adequacy of the monitoring well network in the Annual Effectiveness Report and the need, if any, for new groundwater monitoring wells for demonstrating containment. ADEQ may request the installation of additional monitoring wells in the event that it is determined that new groundwater monitor wells are necessary to achieve the objectives of this Consent Decree. If Settling Defendants object to any request for additional groundwater monitor wells made by ADEQ pursuant to this Paragraph, they may seek dispute resolution pursuant to Section XIX [Dispute Resolution]."

Appendix B: SOW: Item 2. Operations and Maintenance, C. Groundwater Containment Performance Standard states the following:

"Except as provided for in Section XXI (Force Majeure) of the Consent Decree, Settling Defendants shall establish and maintain a capture zone across the entire width and depth of the contaminant plume in the area of Interstate 10."



On an annual basis, as set forth in Section 5 of this SOW, Settling Defendants shall perform a hydraulic capture analysis to demonstrate groundwater containment using water elevation and water quality data, including data trends for both, collected from, at a minimum, the monitoring well network (the "OU2 Monitoring Well Network") identified in Section 7.1.1 of the O&M Manual [Monitoring Well Network]. Settling Defendants may utilize additional evaluations, including analytical and/or numeric modeling, to support the demonstration of hydraulic capture."

Appendix B: SOW: Item 5 Effectiveness Reporting states the following:

"On or before March 31st of each year, Settling Defendants shall submit an Effectiveness Report that includes an evaluation of the analytical and hydraulic monitoring data collected the previous year, beginning October 1st through September 30th, in order to demonstrate compliance with the Performance Standards for groundwater treatment and groundwater containment. The Effectiveness Reports shall include:

- i. a summary of the treatment system performance during the prior calendar year including total volume of water treated and estimated mass of VOCs removed for the year and since operations started;*
- ii. a summary of major maintenance and repair work conducted on the treatment system;*
- iii. water elevation and TCE concentration contour maps in plan view overlain by interpreted flow paths;*
- iv. water elevation and TCE concentration data in cross-section view;*
- v. a comparison of the September water elevations and TCE concentrations to the September 2001 baseline groundwater conditions set forth in the Baseline Groundwater Monitoring Report, July to November, 2001 – Operable Unit 2 Area;*
- vi. a comparison of the September water elevations and TCE concentrations to September 2006 water elevations and TCE concentrations;*
- vii. a comparison of the water elevations and TCE concentrations collected in September of the current reporting year to the same data collected in the prior year;*
- viii. an evaluation of hydraulic capture utilizing water elevation and water quality data including data trends for both, collected from the OU2 Monitoring Well Network;*
- ix. hydrographs and VOC time series graphs for each monitoring well in the OU2 Monitoring Well Network; and*
- x. recommendations, if any, for modifying the OU2 Treatment Facility operations or the OU2 Monitoring Well Network or the groundwater monitoring program.*

The Effectiveness Report will also include the results of any additional evaluations used by Settling Defendants to support the demonstration of hydraulic containment."



Section 7.4.2 of the revised O&M Manual states the following:

“7.4.2 LONG TERM EFFECTIVENESS REPORTS

Section 1.3.2 presents the treated water discharge criteria for the Site. The groundwater remediation performance standards for the OU2 Area are summarized in Section 7.1. The groundwater remediation performance standards and the treated water discharge criteria form the basis for evaluating the performance of the groundwater remediation program.

There are three specific effectiveness evaluations to be performed during the operation of the groundwater remediation system to verify that the specified performance standards are being achieved. These evaluations are as follows.

- i) Monitoring Well and Extraction Well Sampling and Analysis Program: Monitoring and evaluating the quality of groundwater in the plume to determine the effectiveness of the groundwater remediation system in reducing the concentration of site-specific contaminants;*
- ii) Hydraulic Monitoring Program: Monitoring the groundwater flow pattern to verify the containment of the groundwater plume; and*
- iii) Discharge System Sampling Program: Monitoring the treated water discharged to the Grand Canal to verify compliance with the discharge criteria at the point of compliance”*

2. OU2 Area Conceptual Site Model

A brief discussion of the geologic, hydrogeologic, and groundwater conditions of the OU2 Area is presented in this section. Descriptions of the geology and hydrogeology of the OU2 Area are provided in Sections 2.1 and 2.2, respectively.

The OU2 Area GES is located at the western (downgradient) extent of the OU2 Area. The OU2 Area contains a complex unconfined (water table) aquifer system termed “the alluvial aquifer.” The alluvial aquifer consists of a two-hydrostratigraphic subunit system; namely the Salt River Gravel (SRG) and the Basin Fill (BF). The Companies determined the SRG/BF contacts based on the recognition that there is variability in the SRG deposits such that the SRG/BF contact is not always the first fine-grained unit below thick sequences of gravels/sands. The SRG deposits were formed in a higher energy depositional environment with rounded, exotic clasts in the gravel to cobble-size that have been transported over greater distances. The BF was formed in a lower energy depositional environment with a greater percentage of fine and angular clasts. Thus, the contact was based on the first fine-grained unit that no longer contained more than a trace of gravel or cobbles and/or the gravel was angular beneath it.

Groundwater quality and hydrostratigraphic data collected within OU2, including data collected in 2015, 2016, and 2017 associated with the installation of eight additional groundwater monitoring wells and one soil boring in OU2 (CRA, 2014b) have been incorporated into the CSM. The schematic CSM is presented on **Figure 2.1**.



2.1 OU2 Area Geology

The OU2 Area extraction wells are installed into Late Tertiary and Quaternary alluvial sediments. These deposits comprise approximately the upper 50 to 240 ft (from east to west) of geologic material above the sedimentary/igneous bedrock in this area of the Salt River Valley. The unconsolidated deposits of the Salt River Valley have been stratigraphically and/or hydrostratigraphically classified by several entities over the years. The classification has been refined and updated as more subsurface information became available. Reeter and Remick (1986) subdivided the unconsolidated deposits into three stratigraphic units (from oldest to youngest) - the lower conglomerate unit (or, lower alluvial unit [LAU]), the middle alluvial unit (MAU), and the upper alluvial unit (UAU). Anderson, Freethy and Tucci (1990) informally redefined these deposits from a hydrostratigraphic standpoint (from oldest to youngest) – pre-Basin and Range sediments, lower BF, upper BF, and stream alluvium. Hammett and Herther (1995) further refined the classification of these deposits into three stratigraphic units (from oldest to youngest): lower BF, upper BF, and alluvium.

Figure 2.2 shows the locations of five geologic cross-sections that were constructed to provide a depiction of the vertical and horizontal changes in subsurface geology in the OU2 Area.

Figures 2.3 through **2.6** present geologic cross-sections in north-south and east-west orientations of four of the five cross-sections depicted in **Figure 2.2**.

There are three primary mid-Tertiary bedrock units underlying the alluvial fill sediments: the Camels Head Formation, Tempe Formation (also called the Tempe Beds), and unnamed volcanic rocks (Bales, et al., 1986). The Camels Head Formation is composed of coarse sedimentary breccia and conglomerate, with thin interbeds of conglomeratic sandstone (Reynolds and Bartlett, 2002). Most sedimentary breccias are debris-flow deposits, but some represent huge landslides and rock-avalanche deposits. The overlying Tempe Formation is finer-grained, consisting mostly of siltstone and sandstone. Aquifer testing of wells completed in bedrock does not show any difference in permeability between the crystalline plutonic rocks and the cemented sedimentary rocks, indicating that the permeability of both is derived primarily by fractures.

The Phoenix area lies within the Basin and Range Province, which is typified by gently sloping regional normal faults (Reynolds and Bartlett, 2002). Along the regional normal fault, smaller imbricate faults occur, forming stacked half-graben style topography, typical of the Basin and Range Province. Locally, the half-graben topography can be seen in the OU2 Area in rows of semi-parallel bedrock ridges. The bedrock ridges that have formed in the OU2 Area have been named the Airport Ridge and the Honeywell Ridge.

Review of cores from the OU2 borings show that soils described as clayey gravel generally consist of angular gravel- and cobble-size clasts in a clay and silt matrix. These soils are interpreted as either being the result of a mudflow or debris-flow, or could represent locally-derived colluvium, both of which are close to the source area. In many cases, the lithology of these clayey gravels is very similar to the underlying consolidated Camels Head Formation, and has been described in some logs as weathered bedrock. The relatively steep slopes of the bedrock areas preclude the development of a thick residuum or weathered bedrock layer. Instead, as bedrock weathers, a thin layer of colluvium develops and is transported downslope. Finally, soils described as clay, sandy



clay, or gravelly clay most likely represent the result of mudflows, based on their color (red and brown) and proximity to bedrock rises.

Locally, at OU2 monitoring well NW17-S, colluvium is encountered at a higher elevation and is thicker than elsewhere at the OU2 Area GES. The genesis of the colluvium around monitoring well NW17-S likely occurred due to Basin and Range faulting in the area. The thick colluvium in the area of NW17-S is likely the result of a mass slump or mudflow, or a series of slump/mudflows that collected in or near the half-graben. Following deposition, the area was likely faulted, dropping the surrounding area hundreds of feet. This idea is supported by the location of the Airport Ridge and the adjacent much deeper basin (10,000+ ft) (Brown and Poole, 1989) to the west (in OU3). The proximity of NW17-S to the edge of the basin suggests that it is near a blind normal fault, located at or very near the edge of the fault block.

The oldest unconsolidated sedimentary deposits in the OU2 Area are found in the BF. The BF is characterized by the presence of abundant silt and sand with lesser amounts of clay and gravel. These deposits are more compacted than the overlying SRG (Hammett and Herther, 1995). The BF deposits are generally finer-grained and more consolidated and cemented than the SRG. Additionally, they are locally derived. However, according to Reynolds and Bartlett (2002), the BF has four facies that were evident in numerous OU2 logs as follows:

- Sand facies: sand with variable amounts of silt and fine pebbles.
- Fine-grained facies: dominantly silt and sand, with lesser amounts of clay and gravel.
- Basal unit: angular pebbles and gravel in fine matrix of silt, clay, and sand. Clasts can be granite, meta-rhyolite, and coarse quartz (locally derived). Sedimentary clasts include Camels Head and Tempe Formations.
- Conglomerate facies: laterally discontinuous lens, gravelly to conglomeratic material.

In the vicinity of the OU2 Area GES, BF deposits range in combined thickness from 50 to 190 ft.

The SRG is described as well-rounded gravel, cobbles, and boulders in a sandy matrix. SRG is considered to be a fluvial deposit associated with the ancient Salt River (Reynolds and Bartlett, 2002). The SRG generally consists of multi-colored, well-rounded gravel, cobbles, and boulders in a multi-colored sandy matrix with minor silt and clay layers. There is typically little or no calcite cement. In the vicinity of the OU2 Area GES, SRG deposits range in thickness from 110 to 170 ft.

The uppermost unit is the Quaternary alluvium. This unit is a mixture of sand, silt, and clay, with varying amounts of gravels. Locally, above this unit is artificial fill material. Overall, this material ranges in thickness from 2 to 20 ft, and does not affect the hydraulic characteristics of the OU2 Area groundwater because it is well above the groundwater table.

2.2 OU2 Area Hydrogeology

The Site is within the West Salt River Valley (WSRV), which is a structural basin within the Basin and Range province of Arizona, formed during the early to mid-Tertiary period. The WSRV Sub-Basin was then filled with mid-Tertiary sedimentary units, including the Camels Head Formation and Tempe Formation. During mid- to late-Tertiary time, rapid uplift and erosion of



Precambrian rocks and mid-Tertiary sedimentary units resulted in a series of tilted fault blocks, bounded by northwest-trending faults. In the Tempe Buttes area, a pediment called the Papago Park Pediment was formed on the up-thrown fault block that had been cut by several smaller faults, and has been eroded to a number of islands protruding above a relatively gently sloping surface (Bales, et al., 1986). Mid-Tertiary Camels Head and Tempe Formations that comprise the fault blocks have an average dip of 45 degrees to the southwest, with evidence of decreasing dips upward across the Camels Head – Tempe Formation interval (Bales, et al., 1986). Based on subsurface investigations in the OU1 and OU2 areas, the Papago Park Pediment extends to the west to the vicinity of the OU2 GES. Depth-to-bedrock data collected in the OU2 Area indicate that remnants of the tilted fault blocks, similar to the islands described above, exist on the pediment surface and are now buried by Quaternary sediments of the UAU. The bedrock ridges, referred to herein as the Honeywell Ridge and Airport Ridge, exist as eroded remnants of the tilted fault blocks of Camels Head Formation on the pediment. Between these bedrock rises, broad northwest-trending troughs were cut into the Camels Head Formation and Tempe Formation. These broad troughs were subsequently in-filled with the late-Tertiary UAU sediments. The older and deeper portion of the UAU, referred to as the BF, was probably derived in place, or was transported very locally. The BF was deposited across much of the eastern part of the WSRV. It predominantly contains angular to sub-rounded clasts that were derived from the local bedrock exposures. In some locations in the OU2 area, the BF contains exotic sand-size to cobble-size clasts. Concurrently, and subsequent to the deposition of the BF, the surface of the locally derived BF sediments was locally eroded by the Salt River.

There are two primary Hydrostratigraphic Units (HSUs) in the OU2 Area: The SRG and BF (collectively, the alluvial aquifer). As described above, the SRG is a coarse-grained sand and gravel unit deposited by the ancestral Salt River, and exhibits relatively high permeability. Because of its finer-grained composition, the BF is inherently less permeable than the SRG. Both subunits are hydraulically connected in the OU2 Area GES.

For purposes of this report and the CSM, the general hydrostratigraphy classifications, as outlined in the table below, and from the individual well screen database, were used to generate maps in this report.

Hydrostratigraphic Subunit Name	Description	Relative Hydraulic Properties
SRG	Coarse-grained sand, gravel, cobbles, and occasional boulders	High K
BF	Interbedded sand, gravel, and silt/clay, locally interbedded sand and silt/clay with fine-grained silt/clay marker beds	Intermediate K
Bedrock/Colluvium	Camels Head and Tempe Formation	Low K, except if fractured
Note: K - hydraulic conductivity		

For each HSU, there is a wide range of hydraulic properties. The BF has a reported K ranging from 1 to 60 ft per day (ft/day) due to the fine-grained composition of this subunit (Reynolds and Bartlett, 2002). The SRG has a reported higher K, ranging from 200 to 450 ft/day (Reynolds and Bartlett, 2002). As discussed in the Capture Zone Evaluation (Section 3.5) of the



2015 Effectiveness Report (GHD, 2016), the K value in the SRG tends to the lower range because the water levels in the SRG have decreased by approximately 30 ft since 1997 (the year of the previous aquifer testing on the OU2 GES area). This groundwater level reduction has dewatered the more permeable portions of the SRG. To further assess this impact, an aquifer recovery analysis was conducted during the annual OU2 GES system shutdown in early 2016. Based on that analysis, the estimated current SRG hydraulic conductivity is 250 ft/day in the OU2 GES Area.

Under non-pumping conditions, vertical gradients between SRG and BF deposits are negligible in most areas in the vicinity of the OU2 Area GES. In some places, particularly west of the OU2 system, and further west in the OU3 Area, hydraulic heads observed in deeper BF can differ from heads measured in SRG. The influence of the OU2 system on hydraulic heads in deeper BF deposits does not appear to extend as far west as does the effect on hydraulic heads in SRG. This head difference in deeper BF deposits probably derives from the fact that deep BF has considerable silt and clay, making the unit semi-confined instead of unconfined, as with the SRG.

Additionally, the two bedrock ridges described above influence groundwater flow in both the SRG and BF and transect the OU2 Area in a southeast/northwest direction. The Honeywell Ridge is located approximately 1 mile east of the OU2 Area GES, and the Airport Ridge extends through the OU2 Area GES near extraction well EWS. These ridges affect groundwater movement within the alluvial aquifer by channelizing flow across the Airport Ridge. The Airport Ridge has a significant effect on groundwater movement in the southern portion of OU2 and likely inhibits groundwater movement flowing towards the west near the OU2 Area GES, due to its low permeability. A thin veneer of colluvium is present on the margins of these ridges. From a hydraulic perspective, the colluvium materials have a much lower conductivity than the alluvial aquifer subunits.

The occurrence of colluvium around monitoring wells NW15, NW17, and NW18 appears to be different than other colluvium occurrences in the region. At these locations groundwater flow in the colluvium behaves like flow in bedrock (i.e., groundwater moves through discrete zones or fractures, rather than as a porous media). A semi-qualitative short-term pumping test and falling head tests were conducted in March 2010 at monitoring well NW18-M, and falling head tests were conducted at monitoring well NW17-S, to determine the hydraulic properties of colluvium in the area of each well tested. Based on the results from the falling head tests, monitoring well NW17-S has an approximate hydraulic conductivity range of 2.1×10^{-3} to 2.7×10^{-3} ft per minute (ft/min) (3.0 to 3.9 ft/day), and monitoring well NW18-M has an approximate hydraulic conductivity range of 1.6×10^{-3} to 1.8×10^{-3} ft/min (2.3 to 2.6 ft/day).

2.3 OU2 Area GES Layout

As mentioned in Section 1.3, the groundwater remediation system has three extraction wells (EWN, EWM, and EWS) located in a north-south alignment (**Figure 1.1**), and an associated groundwater monitoring well network (**Figure 1.2**). The extraction well alignment and locations were selected, in part, on modeling by Dames & Moore (D&M), as outlined in the Final (100%) Design Report (CRA, 1999). The three extraction wells are constructed of 20-inch diameter well casing and are screened across the SRG and BF (see **Figure 2.3**) with the following screened intervals:



- 100 to 220 ft bgs in EWN
- 86 to 206 ft bgs in EWM
- 94 to 194 ft bgs in EWS

All extraction wells were drilled to the bedrock contact. Lithologically, the proportions of the three principal alluvial units at the extraction well locations are as follows:

- EWN has 145 ft of SRG (includes approximately 10 ft of alluvium at ground surface), underlain by 95 ft of BF deposits.
- EWM has 145 ft of SRG, underlain by 85 ft of BF deposits.
- EWS has 150 ft of SRG, underlain by 55 ft of BF deposits.

During the installation of EWS, Errol L. Montgomery & Associates, Inc. (EMA) noted that formation plugging by bentonite from the drilling fluid may have occurred, and that this may have caused the lower well efficiency observed during initial testing of the well. EWS was redeveloped to remove as much of the drilling mud as possible to improve its hydraulic efficiency. However, no significant improvement was observed (EMA, 2002), indicating that the low efficiency of the well is primarily a function of the formation rather than the construction of the well.

Following installation of each extraction well, EMA conducted aquifer testing consisting of step-discharge and constant discharge rate tests. The test data were evaluated by EMA using the extraction wells and observation wells. The test results give a range of bulk operative transmissivities from 280,000 gallons per day (gpd)/ft (37,400 square ft [ft²]/day) for well EWS, to 300,000 gpd/ft (40,000 ft²/day) for wells EWN and EWM (EMA, 2002). Based on an average saturated aquifer thickness of 150 ft (calculated during the 2000 aquifer tests), the hydraulic conductivities calculated ranged from 1,900 gpd/ft² (254 ft/day) for well EWS to 2,000 gpd/ft² (267 ft/day) for wells EWM and EWN. The 7-day aquifer test conducted by D&M (D&M, 1993) at well DM518 (approximately 1 mile upgradient of the OU2 Area GES), yielded a hydraulic conductivity of 1,550 gpd/ft² (207 ft/day), slightly less than the values obtained by EMA for the OU2 Area GES.

3. Groundwater Monitoring and Evaluation - OU2 Area GES

Groundwater monitoring and sampling for the reporting period was performed at the frequency specified in Section 7.0 of the revised O&M Manual. On April 6, 2017, NXP on behalf of the Companies requested the Hydraulic Groundwater Quality reporting frequency be changed from quarterly to semi-annual (December to May and June to November), and ADEQ approved this request in an April 12, 2017 letter. The December 2016 through May 2017 reporting period was submitted to the Agencies in a letter report dated July 15, 2017 (GHD, 2017b). June through November 2017 groundwater data are presented herein.

The 2017 OU2 Area GES monitoring well network, presented in Section 7.1.1 of the revised O&M Manual, was selected utilizing existing monitoring wells supplemented by monitor wells installed in



the vicinity of the predicted capture zone. The network includes monitoring wells on either side of the predicted capture zone sufficient to demonstrate the effectiveness of capture, as well as additional monitoring wells installed upgradient of the GES to evaluate regional groundwater concentrations. The groundwater monitoring well network is presented on **Figure 1.2** and summarized in **Table 3.1**. Screened intervals for the OU2 Area GES monitoring wells, piezometers, and extraction wells are provided in **Table 3.2**. The groundwater monitoring well network, detailed in **Table 3.1**, was established in the O&M Manual (CRA, 2002b), revised based on comments from the EPA in 2003 and 2004 (CRA, 2004b), and to be consistent with the CD, is presented in the Revised O&M Manual (CRA, 2011a). Additional wells installed in agreement with the Agencies as part of the groundwater monitoring network after 2004, including the wells installed in 2014, are also included on **Figure 1.2** and in **Tables 3.1** and **3.2**.

Groundwater monitoring is completed in accordance with Section 7.1.2, Section 7.1.3, Appendix A (Quality Assurance Project Plan [QAPP]), and Appendix D (Health and Safety Plan [HASp]) of the revised O&M Manual (CRA 2011).

Groundwater levels in the monitoring wells and piezometers, measured during the second half of 2017, are presented in **Table 3.3**.

3.1 Analytical Data and Data Validation

As outlined above, groundwater quality monitoring and sampling for the second half of 2017 were performed from September 1 through October 5, 2017, on select wells in the OU2 GES groundwater monitoring well network. In September and early October 2017, a total of 66 groundwater samples were collected that included five duplicates, three matrix spike/matrix spike duplicates (MS/MSDs), and four field blanks. Additionally, seven rinse blanks and nine trip blanks were collected by GHD during this period. The September and October 2017 Field Sample Key summarizes the GHD sample identification numbers and additional sample details, and is presented in **Table 3.4** and in **Appendix A**.

Prior to purging, a water level measurement was obtained from each monitoring well using an electronic water level indicator. Groundwater quality sampling and hydraulic monitoring of the monitoring wells were conducted in accordance with the procedures in the Revised O&M Manual (CRA, 2011). Water quality field parameters, including pH, temperature, and specific conductivity, along with color and clarity of the purged water were monitored during purging in accordance with the Revised O&M Manual, Field Sampling Plan (FSP), and QAPP. After approximately three well volumes were purged from the monitoring well (except for specific wells as identified below), a groundwater sample was collected for analysis of select volatile organic compounds (VOCs) using EPA Test Method 8260B.

Wells NW04-S, NW06-S, NW07-S, and NW08-S could not be purged of three well volumes, even at a low pumping rate of <0.5 gallons per minute (gpm). Therefore, they were purged dry after one well volume. After approximately 12 hours, these wells had at least 80 percent recovery, and a sample was collected at that time from each well with a disposable bailer.



Well EW22-S had approximately 2 feet of water in its casing, and could not accommodate a pump without immediate cavitation. Therefore, a sample was collected from this well with a disposable bailer.

A summary of the monitoring well development data for GHD sampled wells is presented in **Table 3.5** for September and October 2017. Samples collected by GHD were analyzed by SGS Accutest Laboratories (Arizona Department of Health Services [ADHS] Certificate #AZ0762) in Phoenix, Arizona. Laboratory analytical reports are included as **Appendix A** (CD for the Agencies only). A data quality assessment and validation for September and October 2017 are included in **Appendix B**. All analytical data were found to exhibit acceptable levels of accuracy and precision, with the exception of a high relative percent difference (RPD) for 1,1-dichloroethene and cis-1,2-dichloroethene for the MS/MSD sample collected from well NW17-S. As a result, the associated detected sample results for NW17-S were qualified as estimated.

3.2 Groundwater Evaluation

This section presents an evaluation and verification of the OU2 Area GES' effect on containing the VOC groundwater plume at approximately 20th Street.

3.2.1 Groundwater Elevations

This section presents the hydrogeologic conditions, namely groundwater elevation data, for September 2001 (Baseline), September 2006 (a second comparison period added to meet the requirements of Paragraph 5 of the SOW and Section IX, Paragraph 23, in the CD due to the significant expansion of the monitoring well network in 2005), and September 2016 (previous year) to September 2017. Groundwater elevation data for these three periods are presented in **Table 3.3** for wells located in the OU2 Area. Water elevation changes from Baseline to September 2017, from September 2006 to September 2017, and September 2016 to September 2017 are also presented in **Table 3.3**. Water level elevations are depicted on monitoring well hydrographs presented in **Appendix C**. Groundwater elevation data for the entire OU2 Area for September 2001 and September 2017 are presented on figures in **Appendix D**. Additionally, at the request of the Agencies, March 2017 water levels (when the OU2 GES was off [due to flows in the Salt River] are included in figures in **Appendix D**.

3.2.1.1 September 2001 (Baseline) Groundwater Elevation Data

OU2 Area groundwater elevations for September 2001 are presented on **Figure 3.1** (SRG), **Figure 3.2** (BF), and **Figure 3.3** (Bedrock), and are summarized in **Table 3.3**. These groundwater elevations represent baseline conditions prior to initiating routine operations of the OU2 Area GES. Groundwater flow directions in SRG and BF are generally westerly in the vicinity of the OU2 Area GES.

In September 2001, groundwater was encountered within SRG at a depth of approximately 80 ft bgs in the vicinity of the OU2 Area GES and the OU2 monitoring well network that existed at the time (CRA, 2002b, 2002c). The horizontal hydraulic gradients in the SRG (for September 2001) ranged from 2.2×10^{-3} to 4.9×10^{-3} ft per foot (ft/ft) (see **Table 3.6**). Monitoring well hydrographs are in **Appendix C**.



The initial depths to groundwater in the OU2 Area GES extraction wells, shortly after installation in June 2000, were 87 ft below top of casing for EWN, and 78 ft below top of casing for both EWM and EWS.

3.2.1.2 September 2006 Groundwater Elevation Data

September 2006 groundwater elevations for the OU2 Area are presented on **Figure 3.4** (SRG), **Figure 3.5** (BF), and **Figure 3.6** (Bedrock), and summarized in **Table 3.3**. The horizontal hydraulic gradients in the SRG (for September 2006) ranged from 1.9×10^{-3} to 7.4×10^{-3} ft/ft (see **Table 3.6**). The September 2006 period is presented in accordance with the OU2 CD. Although the September 2006 data represent groundwater conditions after 5 years of operations, additional water elevation data are available for the period from the expanded OU2 groundwater monitoring network. The September 2006 water elevation contour maps depict a cone-of-depression in the SRG and BF that centers on the OU2 GES, with the resulting capture zone extending beyond the width of the observed plume in SRG and BF deposits.

3.2.1.3 September 2017 Groundwater Elevation Data

September 2017 groundwater elevations for the OU2 Area are presented on **Figure 3.7** (SRG), **Figure 3.8** (BF), and **Figure 3.9** (Bedrock), and summarized in **Table 3.3**. The horizontal hydraulic gradient in the SRG (September 2017) ranged from 1.8×10^{-3} to 7.6×10^{-3} ft/ft (see **Table 3.6**) in the vicinity of the OU2 Area GES. Away from the OU2 Area GES, both upgradient and downgradient, the magnitude and direction of the hydraulic gradients were similar to baseline conditions. In the immediate vicinity of the GES, however, hydraulic gradients have increased, and these gradients have been locally reversed to the west of the OU2 Area GES. The September 2017 water elevation contour maps depict a cone-of-depression in the SRG and BF that is near the center on the OU2 GES, with the resulting capture zone extending from north of OU2 GES monitoring well EW-07 to approximately monitoring well NW-11M in the SRG, and from north of OU2 GES monitoring well NW12-D to just south of monitoring well NW16-D in the BF deposits.

3.2.2 Water Level Trends

Groundwater monitoring well hydrographs, precipitation data, and a tabulated listing of water level measurements are presented in **Appendix C** (Table C.1). Each January, the OU2 Area GES is shut down for maintenance of the Grand Canal. This maintenance period typically extends into late January or early February each year. When the OU2 Area GES is restarted, groundwater elevations in the vicinity of the OU2 Area GES generally return to pre-shutdown water levels in less than 30 days, which indicates a quick return to hydraulic containment.

Water level trends are discussed below for 2001 (Baseline) to September 2017, for September 2006 (Second Baseline) to September 2017, and for September 2016 to September 2017.

3.2.2.1 Baseline to September 2017

Since September 2001 (Baseline), groundwater levels have declined an average of 19.5 ft in monitoring wells located in the OU2 Area due to operations of the OU2 Area GES and the continuing regional drought (**Table 3.3**). Greater groundwater declines, up to approximately 27 ft,



are observed in select OU2 monitoring wells (EW07, NW03, PZ01-S/D, PZ02-S/D, and TEW01), which are located in close proximity to the OU2 Area extraction wells. The principal decline in groundwater levels occurred from 2001 through approximately 2004. From 2005 through 2010, groundwater levels were generally increasing, although the recovered water level elevations were lower than the 2001 baseline elevations. Comparison of 2010 and 2017 groundwater levels indicates an overall decline in water elevations. However, between September 2016 and September 2017, water level elevations exhibited an average increase as a result of significant water releases into the Salt River channel (facilitating groundwater recharge) from approximately February 15, 2017 until March 15, 2017. Despite the variability in the regional groundwater level elevations from 2001 through 2017, the regional groundwater flow direction remains unchanged in the OU2 Area away from the GES, with groundwater generally flowing from east to west with localized variations due to local hydrogeologic conditions, such as in and around the bedrock ridge areas. Localized groundwater flow directions have also been altered by operation of the OU2 Area GES, with groundwater flow directed towards the OU2 Area extraction wells, including a reversal of the groundwater flow direction immediately downgradient of the three extraction wells.

Geologic cross-sections A-A' through D-D' (**Figures 2.3 through 2.6**) illustrate the overall decline in groundwater levels between the 2001 and 2017 monitoring periods. **Figure 3.10** shows the change in groundwater elevation between September 2001 and September 2017 in plan view.

3.2.2.2 September 2006 to September 2017

Between September 2006 and September 2017, groundwater levels fluctuated, with an overall average decrease of 13 ft in monitoring wells located within the OU2 Area (**Table 3.3**). Groundwater elevations increased throughout the OU2 Area in 2010 and again in early 2017 due to the surface water releases into the Salt River channel. However, overall decreases have been occurring since approximately June 2011 to present due to the extended regional drought. **Figures 2.3 through 2.6** show the difference in water levels between September 2006 and September 2017 in cross-section view. **Figure 3.11** shows the change in groundwater elevation between September 2006 and September 2017 in plan-view.

3.2.2.3 September 2016 to September 2017

Between September 2016 and September 2017, groundwater levels increased an average of approximately 1.6 ft in SRG-screened monitoring wells in the OU2 Area (**Table 3.3**). **Figure 3.12** shows the changes in groundwater elevation between September 2016 and September 2017 in the SRG. During the period from September through November 2017, groundwater levels in the BF of the OU2 area increased an average of 1.2 feet. Refer to **Appendix C** for individual well water level hydrographs and trends.

3.2.2.4 Vertical Gradients

Groundwater extraction effects on vertical flow in the immediate area surrounding EWN and EWM can be observed by reviewing data from the two nested monitoring well locations (PZ01-S/D and PZ02-S/D). These nested pairs each consist of an SRG and a Bedrock well. The nested pairs are located between extraction wells EWN and EWM, and measure the vertical gradient caused by operation of the extraction system. In September 2001, prior to the start of pumping, the



groundwater elevations were similar, with both of the PZ01-S/D and PZ02-S/D well nests exhibiting a slight upward and slight downward vertical gradient of 3.4×10^{-4} ft/ft and -1.6×10^{-4} ft/ft, respectively (**Table 3.6**). These very low vertical gradients are indicative of a predominantly horizontal flow regime, as they are at least an order of magnitude lower than the horizontal gradient. For the September 2017 water levels, the PZ01-S/D well nest exhibited a slight downward vertical gradient of -2.2×10^{-3} ft/ft, and the PZ02-S/D well nest exhibited a slight upward vertical gradient of 2.0×10^{-4} ft/ft. The vertical gradients observed between SRG and Bedrock at PZ01 and PZ02 are so small that any differences between them (or potentially the direction and magnitude of gradients measured at these sites themselves) may be attributable to measurement error in water level elevations. For September 2017 water levels, a slight upward vertical gradient of 5.7×10^{-4} ft/ft was noted for the NW18-S (SRG) and NW18-M (colluvium) well nests.

Further away from the extraction wells, vertical gradients between groundwater in SRG and BF vary with location. **Figure 3.13** presents the September 2017 spatial distribution of vertical gradients surrounding the OU2 Area GES in SRG and BF, respectively. Conceptualized groundwater elevation contours and relative vertical gradient changes to the OU2 GES are depicted on cross-sections A-A', B''-B''', and C-C' on **Figures 3.14, 3.15, and 3.16**, respectively. Vertical gradients to the south and southeast of the extraction wells and east of 20th Street vary in direction and range from -3.4×10^{-3} ft/ft (NW09-D/D2) (downward gradient) to -1.1×10^{-2} ft/ft (NW23-S/D) (downward gradient). Vertical gradients to the southwest of the extraction wells and west of 20th Street range from -5.6×10^{-3} ft/ft (NW07-S/M) (downward in SRG only) to 3×10^{-2} ft/ft (OU312-M/D) (upward). Vertical gradients to the northwest of the extraction system are range from -3.3×10^{-3} ft/ft (NW04-M/D) (downward gradient) to 8.7×10^{-2} ft/ft (OU314-M/D) (upward gradient).

As expected, the effect of the OU2 Area GES on vertical gradient direction and magnitude declines with distance from the extraction wells. Vertical gradients reverse direction from slightly-downward (NW06-S/D) within the OU2 GES capture zone to slightly-upward (NW07-M/D), west and outside of the OU2 GES capture zone. A consistently strong upward vertical gradient direction is observed moving further to the west (OU312-M/D) of the OU2 GES.

3.2.3 Groundwater Chemistry

Tabulated summaries of the groundwater analytical data for Baseline (September 2001), September 2006, and September 2017 are provided in **Table 3.7** (SRG), **Table 3.8** (BF), and **Table 3.9** (Bedrock and Colluvium).

3.2.3.1 Baseline (September 2001) Chemical Concentration Data

TCE concentration data for the OU2 Area GES for September 2001 are presented on **Figure 3.17** (SRG), **Figure 3.18** (BF), and **Figure 3.19** (Bedrock), including the TCE plume boundary interpretation (based on the maximum containment level [MCL] of 5 micrograms per liter [$\mu\text{g/L}$]) for 2001. The 2001 groundwater plume boundary represents baseline conditions prior to startup of the OU2 Area GES. Baseline concentration figures for the individual contaminants of concern (COCs) are included in **Appendix D**.



3.2.3.2 September 2006 Chemical Concentration Data

TCE concentration data for the September 2006 sampling event in the OU2 Area are presented on **Figure 3.20** (SRG), **Figure 3.21** (BF), and **Figure 3.22** (Bedrock), and have been used to create a contoured TCE plume boundary interpretation for 2006. The September 2006 period is presented in accordance with the OU2 CD. The September 2006 data represent groundwater conditions after 5 years of OU2 GES operations, and includes additional water quality data for the period from the expanded OU2 groundwater monitoring network.

3.2.3.3 September 2017 Chemical Concentration Data

TCE concentration data for the September 2017 sampling event in the OU2 Area are presented on **Figure 3.23** (SRG), **Figure 3.24** (BF), and **Figure 3.25** (Bedrock). These data have been used to create a contoured TCE plume boundary interpretation for 2017.

Cross-sections with TCE concentration data for 2001, 2006, and 2017 are provided on **Figure 3.26** (Cross-Section A-A'), **Figure 3.27** (Cross-Section B-B'), **Figure 3.28** (Cross-Section C-C'), and **Figure 3.29** (Cross-Section D-D').

Tabulated listings of the groundwater analytical data for the compounds included on **Figures 3.17** through **3.29** are provided in **Table 3.7** (SRG), **Table 3.8** (BF), and **Table 3.9** (Bedrock and Colluvium). In addition, 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), cis 1,2-dichloroethene (cis 1,2-DCE), and TCE analytical data for 2001 and 2017 have been posted on figures in **Appendix D** for SRG, BF, and Bedrock for the entire OU2 Area. The figures for SRG and BF include the TCE plume boundary interpretation for 2001 and 2017.

The TCE concentrations in the monitoring wells screened within the colluvium (NW15-S, NW17-S, and NW18-M) are also posted on **Figure 3.39**. These results are presented in **Table 3.9**. TCE distributions in the colluvium-screened wells (NW15-S, NW17-S, and NW18-M) are separate from the alluvial aquifer contaminant distributions. The occurrence of the colluvium as it pertains to OU2 is discussed briefly in Section 2.2.

3.2.4 Contaminant Concentration Trends

Although changes in water quality occur more slowly and over a longer timeframe than water elevation responses in the OU2 Area, noticeable and significant water quality changes have occurred since the 2001 Baseline period. Decreasing TCE concentration trends are observed in the OU2 extraction wells. The anticipated concentration trend in a given monitoring well is partially a function of the monitoring well location; however, decreasing concentration trends are also observed in a number of monitoring wells located upgradient and downgradient of the OU2 Area GES, independent of its operation, consistent with the overall concentration decreases in the larger, regional Site. Since start-up, the width of the plume (north and south) has decreased in the vicinity of the OU2 Area GES in both SRG and BF. The changes in TCE concentrations from Baseline to September 2017, from September 2006 to September 2017, and from September 2016 to September 2017, are calculated and presented in **Table 3.7** (SRG), **Table 3.8** (BF), and **Table 3.9** (Bedrock and Colluvium). The change in TCE concentrations from Baseline in September 2001 to September 2017 are also presented on **Figures 3.30**, **3.31**, and **3.32** for the SRG, BF, and Bedrock, respectively. The change in TCE concentrations from September 2006 to September 2017



are presented on **Figures 3.33, 3.34, and 3.35** for the SRG, BF, and Bedrock, respectively. The change in TCE concentrations from September 2016 to September 2017 are presented on **Figures 3.36, 3.37, and 3.38** for the SRG, BF, and Bedrock, respectively. VOC concentration hydrographs for selected monitoring wells are provided in **Appendix C**.

The evaluation of trends consists of a qualitative discussion of the variation in the monitoring and extraction wells for Baseline to September 2017, September 2006 to September 2017, and September 2016 to September 2017. In addition, a quantitative statistical trend analysis of the data is completed from Baseline to September 2017 and September 2010 or September 2013 to September 2017 (last 8 years or minimum eight samples) (Section 3.3.5.1).

3.2.4.1 Baseline to September 2017

The concentration trends vary by location. As expected, a temporary increase in VOC concentrations, attributable to the flux of VOCs moving past a specific well location, is observed in a number of wells upgradient and within the capture zone of the OU2 Area GES. Also, as expected, a reduction in TCE concentrations is observed in monitoring wells in both alluvial subunits downgradient of the OU2 Area GES due to the establishment and maintenance of the hydraulic capture zone by the OU2 Area GES pumping. Finally, a reduction in plume width is observed in the vicinity of the OU2 Area GES. TCE plume width reduction since the startup of the OU2 Area GES is expected because of the localized groundwater flow direction changes due to OU2 Area GES pumping, and the decrease in dissolved-phase concentrations due to extraction and treatment of the groundwater. Locally, there is a slight expansion of the plume width to the north, upgradient of the extraction well locations (at well NW-01).

In 2017, the general trends of the 1,1-DCE, 1,1-DCA, and cis-1,2-DCE graphs are decreasing, similar to the TCE trend. This indicates the absence of significant biodegradation at the site (consistent with the OU2 CSM) and a reduction in VOC concentrations for both parent and daughter compounds in most OU2 Area groundwater monitoring wells, both upgradient and downgradient of the OU2 Area GES. A graphical summary is provided in **Appendix C**.

3.2.4.2 September 2006 to September 2017

For the period from September 2006 to September 2017, the data show reduced TCE concentrations in both alluvial subunits downgradient of the OU2 Area GES due to the maintenance of the hydraulic capture zone by the OU2 Area GES pumping. The plume width is also reduced in the vicinity of the OU2 Area GES, primarily in the SRG with a small reduction observed in the southern portion of the BF.

3.2.4.2.1 Colluvium-Screened Wells – Trends (2007 to 2017)

As described above, the TCE concentrations in the monitoring wells screened within the colluvium (NW15-S, NW17-S, and NW18-M) are posted on **Figure 3.39** for September 2017 data; these results are presented in **Table 3.9**. The trend hydrographs for colluvium wells (NW15-S, NW17-S, and NW18-M) are shown in **Appendix C**. From 2007 (well installation date) to 2017, the TCE, 1,1-DCE, 1,1-DCA, and cis-1,2-DCE graphs show a reduction in these concentrations for well NW17-S. Well NW15-S yields an overall reduced concentration from 2007, but a slight upward



trend between 2013 and 2015, prior to becoming dry in 2016. Well NW-18-M has had an overall decrease in VOC concentration since 2007 (installation), but has fluctuated within a narrow range since 2009.

3.2.4.3 September 2016 to September 2017

Between September 2016 and September 2017, reductions in TCE concentrations were observed in most monitoring wells completed in both alluvial subunits downgradient of the OU2 Area GES due to the maintenance of the hydraulic capture zone by the OU2 Area GES pumping. The year-to-year TCE concentration trends in most of the OU2 GES monitoring wells are consistent with either minor variations typically observed in monitoring wells, or are consistent with anticipated trends based on well locations (refer to **Appendix C** Hydrographs). As discussed in the Statistical Evaluation in Section 3.3.5.1, the overall TCE trend for most downgradient monitoring wells is decreasing; however, there were slight TCE increases from 2016 to 2017 in some well locations, as noted in **Table 3.7** (SRG), **Table 3.8** (BF), and **Table 3.9** (Bedrock). The change in TCE concentrations between 2016 and 2017 are shown on **Figures 3.36** (SRG), **3.37** (BF), and **3.38** (Bedrock). As expected, a temporary increase in VOC concentrations, attributable to the flux of VOCs moving past a specific well location, is observed in a number of wells upgradient and within the capture zone of the OU2 Area GES. Well NW03 has a noted increase in TCE concentration (from 15.0 micrograms per liter [µg/L] in September 2016 to 60.6 µg/L in September 2017), but this well is within the OU2 GES capture zone. The extended OU2 GES shutdown (routine annual followed by SRP flood followed by effluent line repair) is a potential contributing factor for this increase.

As discussed further in Section 3.3.5.2, concentration increases in downgradient monitoring wells, particularly in the southern portion of the OU2 Area, may be a result of the hydraulic capture not extending across the full southern plume boundary and suggest hydraulic capture may not be complete in the central portion of the Site. With the exception of NW18-S in the central portion of the site, downgradient TCE concentrations in the southern portion of the plume are well below the MCL in the SRG and low or below detection limits in the BF, thus indicating that there is no or limited downgradient migration of the plume for portions of the Site located outside the southern extent of capture.

3.2.4.4 Extraction Well Data

TCE concentrations have significantly decreased (>85 percent) in groundwater samples collected from each of the three extraction wells since startup in 2001. TCE concentrations for each of the three extraction wells from the September 2001, September 2006, September 2016, and September 2017 sampling events are as follows:

Extraction Well	TCE Concentration (µg/L)			
	2001	2006	2016	2017
EWN	98	14	6.9	7.7
EWM	320	170	39.6	38.7
EWS	320	33	37.2	45.4



Similarly, significant reductions in the other individual COCs have been observed in each of the three extraction wells. Extraction well hydrographs and VOC concentration trend figures are presented in **Appendix E**.

As indicated in the above table, TCE concentrations in each extraction well dropped by an order of magnitude from 2001 to 2017. Although the overall TCE concentration reduced from 2001, TCE concentrations at extraction wells EWM and EWN have remained relatively constant for several years, including the period from 2016 to 2017. This trend is consistent with expected results for long-term operations remediating a regional plume. TCE concentrations observed at well EWS have increased for several years, including the period from 2016 to 2017. Increasing TCE concentrations are also observed in nearby upgradient monitoring wells NW08-S, NW08-M, and NW16-M. The increasing trend in extraction well EWS may be associated with this upgradient mass migrating towards the extraction well, and is possibly more apparent now due to the lower EWS extraction rate and the shifting of the plume centerline, resulting in less influence by clean water being drawn into the well from outside the plume boundary.

Regardless of the VOC variations observed in the extraction wells, all groundwater extracted by the OU2 GES is treated to below drinking water standards prior to discharge for beneficial re-use.

3.3 Capture Zone Evaluation

This section presents the evaluation of the effectiveness of the OU2 Area GES in achieving hydraulic containment of the VOC plume at the Site. The demonstration of hydraulic containment is best evaluated using converging multiple lines of evidence. For this evaluation, a "Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems" (EPA, 2008) was utilized. This EPA guidance highlights six key steps for systematically performing a capture zone evaluation. The steps identified are listed below:

- Step 1 Review site data, CSM, and remedy objectives.
- Step 2 Define site-specific target capture zone(s) (TCZ[s]).
- Step 3 Interpret water levels:
 - Potentiometric surface maps (horizontal) and water level difference maps (vertical).
 - Water level pairs (gradient control points).
- Step 4 Perform calculations:
 - Estimate flow rate calculation.
 - Capture zone width calculation (can include drawdown calculation).
 - Modeling (analytical or numerical) to simulate water levels, in conjunction with particle tracking and/or transport modeling.
- Step 5 Evaluate concentration trends.
- Step 6 Interpret actual capture based on Steps 1 through 5, compare to TCZ(s), and assess uncertainties and data gaps.



This evaluation is based on the assessment of the lines of evidence outlined in Steps 1 through 6 above.

A TCZ has been established for this Site. The development of the TCZ was based on the Performance Standards provided in the SOW (see Section 1 and 2C). The Companies have identified the TCZ consistent with EPA's guidance (EPA, 2008) to assist with the containment evaluation (**Figures 3.7** and **3.8** in plan view, and **Figures 3.14, 3.15, and 3.16** in cross-section view).

3.3.1 Water Budget/Flow Rate Calculations

EPA guidance recommends simple horizontal analyses be performed to evaluate an estimated flow rate to achieve capture and to estimate capture zone width from pumping. Horizontal groundwater volumetric flow rate (i.e., flux) calculations provide an approach to assess hydraulic containment. The EPA (2008) capture zone guidance suggests using groundwater flux calculations based on Darcy's Law. The groundwater flux approach determines the volumetric flow rate (e.g., cubic ft per day [ft³/day]) of groundwater moving through a selected portion of the alluvial aquifer (i.e., TCZ). These calculations are included and explained in more detail in **Appendix F-3** and briefly summarized below.

The calculated flux is compared to the groundwater extraction rate for that particular area, such as the TCZ (at 20th Street). If the current pumping rate exceeds the calculated flux by a safety factor between 1.5 to 2.0, then this evaluation provides a line of evidence demonstrating hydraulic containment.

The estimated TCZ width, as measured north and south along 20th Street between the plume boundaries for the SRG, is approximately 2,438 ft (**Figure 3.7**). For the BF, the estimated TCZ width is approximately 3,479 ft (**Figure 3.8**). Between March and September 2017 the plume widths in the SRG and BF reduced by approximately 26 percent and 5 percent, respectively. By averaging the combined SRG and BF TCE plume widths, the corresponding TCZ becomes 2,959 ft in September 2017. The averaging approach considers the hydraulic differences between the more permeable SRG and less permeable BF and their hydraulic response to groundwater extraction.

Due to the varied conditions, the saturated alluvial aquifer thickness was based on the average depth from the water level elevation at each extraction well to the Bedrock contact in each of the three extraction wells. In 2017, the alluvial aquifer water levels increased approximately 1.6 ft in the OU2 Area GES. In September 2017, the average saturated alluvial thickness was calculated to be 145.1 ft. In September 2017, the bulk hydraulic conductivity value was calculated to be 111.7 ft/day for the TCZ area, which incorporates the average of the weighted hydraulic conductivities of both the SRG and BF. Non-pumping 2001 hydraulic gradient values were used in the calculations. Therefore, the resulting estimated natural flow rate (Q) would be approximately 548 gallons per minute (gpm) (for September 2017). The average September 2017 OU2 GES extraction rate was 1,370 gpm, which is 2.5 times greater than the calculated flux, and exceeds the EPA's recommended safety factor range of 1.5 to 2.0. Hence, the flux analysis indicates that sufficient groundwater is being extracted to achieve the TCZ at OU2. However, because of declining groundwater levels due to drought conditions and the ongoing operation of the OU2 GES, the plume center has shifted. Hence, this line of evidence alone, while significant, does not support full



containment of the OU2 plume. The inferred extent of capture is depicted on **Figures 3.7, 3.8, and 3.14**. The capture zone created by OU2 extraction wells is no longer aligned with the plume center because of the reduction of plume width to the north. As such, a portion of the extracted water is coming from an area north of the plume boundary rather than from the observed extent of impacted water.

3.3.2 Capture Width Calculations

Consistent with EPA guidance, the capture zone width calculation uses the same assumptions as the estimated flow rate calculation, but assumes pumping is from one centrally located well. This is an acceptable approach for multiple well systems (Erdmann, 2000) and is included in the EPA Capture Zone guidance (EPA, 2008 on p. 22). However, this calculation assumes that the single theoretical well is centered within the plume; an assumption that is not met when comparing the OU2 TCE plume and the location of the OU2 GES. Furthermore, there are other certain assumptions that are not fully met given the complex hydrogeologic environment and declining groundwater elevations. Using the groundwater extraction rate from the OU2 GES, bulk K values for the OU2 area, saturated thickness (b), and regional hydraulic gradient (i), it is possible to estimate the distance from the well to the downgradient end of the capture zone along the central line of the flow direction (X_o), capture width at the wells ($2*Y_{well}$), and the maximum width of capture far upgradient ($2*Y_{max}$). A range of values was calculated based on a range of b (due to regional drought/drop in aquifer water levels) and varying bulk K as explained in **Appendix F-3**. The input parameters and estimated capture zone dimensions are summarized below and described in more detail in **Appendix F-3**.

An SRG hydraulic conductivity value of 250 ft/day was used for this analysis, because it represents recent SRG and regional conditions based on the recovery analysis conducted in January 2016 (GHD, 2016). The average hydraulic conductivity value of 28 ft/day was used for the BF.

The calculated capture zone width for each scenario at the wells ($2*Y_{well}$) exceeded the identified TCZ (from **Table 4.1** above) of 3,410 ft for May 2017 and 2,959 ft for both September 2017 and January 2018. In May and September 2017, with weighted K values of 132.9 and 145.1 ft/day, the capture width at the wells were 4,498 ft and 3,698 ft respectively, which is greater than the average combined plume width listed in **Table 4.1** above. In January 2018, the extraction rate was reduced to approximately 1,270 gpm with a $2*Y_{well}$ capture width at the wells of 3,500 ft. This value is 541 ft more than the average plume width for the BF and SRG (approximately 2,959 ft, calculated from **Figures 3.7 and 3.8** of the 2017 Effectiveness Report), and slightly more than the BF plume width (3,478 ft.). The maximum calculated capture zone width upgradient of the OU2 GES ($2*Y_{max}$) exceeded the calculated average plume width for the SRG and BF. However, because the observed reduction in plume width is primarily occurring along the northern plume boundary, the capture zone created by OU2 extraction wells is no longer aligned with the center of the plume. Therefore, while these capture width zone calculations indicate that the OU2 GES creates a capture zone that is wider than the measured width of the TCE plume, this line of evidence alone does not support full containment of the OU2 plume because the plume centerline has shifted and OU2 GES is no longer centered within the plume. The results from the calculated capture zone width are consistent with the estimated capture zone widths presented on **Figures 3.7 and 3.8**.



3.3.3 Potentiometric Surface Maps

Groundwater level measurements were used to create groundwater contour maps for SRG and BF. The manually drawn contour maps are presented on **Figures 3.7** and **3.8** for September 2017. Consistent with EPA guidance, the extraction well water levels were only considered qualitatively and were not used quantitatively in the preparation of the plan view contours. Also, consistent with previous reports, the September 2017 water levels were evaluated because this is the most complete data set for 2017. Groundwater flow lines were manually drawn and overlain on the September 2017 contour maps. Additionally, Surfer™ computer-generated maps were prepared to verify the contouring was not biased (**Appendix F-3**). The Surfer™ computer-generated maps generally support the professional interpretations presented in the manually drawn contour maps. The results of the potentiometric surface map evaluation for the SRG and BF are presented below.

Salt River Gravel

Examination of **Figure 3.7** supports the conclusion that hydraulic containment of the observed plume in the SRG is mostly being maintained. **Figure 3.7** illustrates the OU2 GES capture zone extending from north of the northern plume boundary to south of monitoring well NW11-M. The Airport Ridge plays a prominent role in localized groundwater flow southeast of the OU2 GES. Groundwater impacts in the vicinity of monitoring well NW23-S may flow south of the southern extent of the hydraulic capture zone, although TCE concentrations in downgradient monitoring wells (NW07-M, NW07-S, NW09-M, NW13-M, and NW14-M) remain below MCLs. Downgradient of the OU2 Area GES, hydraulic containment extends a maximum of approximately 1,030 ft west of 20th Street. These results are consistent with the capture zone calculations described in Section 3.3.2 above.

Basin Fill

The groundwater flow lines and estimated capture zone for the BF are shown on **Figure 3.8**. Examination of **Figure 3.8** shows that the estimated OU2 GES capture zone extends from north of monitoring well NW12-D to south of monitoring well NW16-D in the BF deposits. The southern extent of hydraulic capture is not interpreted to extend across southern plume boundary. Downgradient hydraulic containment, as estimated on **Figure 3.8**, extends to a maximum of approximately 740 ft west of 20th Street. These results are consistent with the capture zone calculations described in Section 3.3.2 above.

3.3.4 Cross-Section Contours

Plan view groundwater contours limit hydraulic capture evaluation to two dimensions. Per the CD, however, hydraulic containment of the entire thickness of the affected hydrogeologic units is required, thereby necessitating the evaluation of hydraulic containment in three dimensions. To evaluate vertical containment, groundwater contours were prepared for three existing geologic cross-sections. These cross-sections were previously presented on **Figures 2.3** and **2.4** of this report, although **Figure 3.15** is based on a modified cross-section and is only partially shown on **Figure 2.4**. The cross-section locations are shown on **Figure 2.2**.

Cross-section A-A' is a north-south cross-section through the line of extraction wells. Manual groundwater elevation contours were prepared using the water level measurements for



September 2017. The resulting contours are shown on **Figure 3.14**. Groundwater flow lines were not drawn on the contours because of the vertical exaggeration (in a vertically exaggerated cross-section, the flow lines do not cross the contours at right angles). Instead, the contours were examined to assess flow directions and the variability in flow direction with depth. The conceptualized groundwater contours on **Figure 3.14** appear to show that the direction and magnitude of horizontal gradients along the cross-section are consistent with depth, and therefore, are generally similar to the conclusions with respect to containment as previously discussed using the groundwater potentiometric surface maps. South-southwesterly groundwater flow from monitoring well CRA01 occurs in SRG and BF, and the horizontal hydraulic gradients are very large. To the south of EWS, groundwater flow is northerly from as far south as monitoring well NW16-D. South of this area, the Airport Ridge plays a prominent role in localized groundwater flow. This finding is consistent with the results of the plan view groundwater contours for SRG and BF.

Modified cross-section B''-B''' (**Figure 3.15**) is an east-west trending section. East of the OU2 Area GES, the line of section parallels groundwater. However, west of the OU2 Area GES, the line of section does not directly follow the groundwater flow lines as the effect of pumping causes flow lines to bend and even reverse themselves. Examination of **Figure 3.15** shows that groundwater flow is from the east towards the OU2 Area GES. Based on this cross-section, the direction and magnitude of horizontal gradients is consistent with depth to the east and towards the extraction wells, and therefore, support the conclusions with respect to containment as previously discussed using the groundwater potentiometric surface maps. This is consistent with the capture zone defined by the plan view groundwater contours. West of the OU2 Area GES, the groundwater contours indicate that the direction and magnitude of horizontal gradients for both SRG and BF are consistent with depth between EWS and the NW07 monitoring well nest, but show that the direction of flow is largely away from the extraction wells. This result is consistent with the plan view contours for SRG and BF, which show the approximate capture limit is west of the extraction wells.

Of particular interest is the area west of well nest NW07, on the western side of Cross-Section B''-B'''. The horizontal gradients are no longer consistent in this area between the SRG and BF. As previously discussed in Section 3.2, vertical gradients between deep BF and SRG/shallow BF change dramatically in a westward direction. **Figure 3.13** shows that further west from the OU2 Area GES, vertical gradients increased in magnitude and were upward in direction (up to 3.3×10^{-2} in well EW13-168/228). While these gradients do not affect the containment analysis of the OU2 Area GES, they do have implications on the groundwater flow west of the OU2 Area GES. West of the OU2 Area GES, the upward vertical gradients indicate groundwater from deep BF flows upward into SRG and shallow BF, and prohibits downward groundwater movement from SRG and shallow BF into deep BF.

Modified Cross-Section C-C' (**Figure 3.16**) is an additional east-west trending section perpendicular to the line of extraction wells between EWN and EWM. East of the OU2 Area GES, the line of section (C-C') parallels groundwater similarly to **Figure 3.15**, and demonstrates that in the vicinity of the extraction wells, the effect of pumping causes flow lines to bend and reverse orientation toward the OU2 GES. Based on this cross-section, the direction and magnitude of horizontal gradients is bifurcated in the vicinity of the extraction wells, causing a localized reversal in flow direction. This is consistent with the cone of depression around the extraction wells depicted on **Figure 3.7**. Further west, positive vertical gradients increase (7.1×10^{-3} in cluster EW22S/D).



3.3.5 Groundwater Chemistry Trends

Trends in groundwater chemistry can be used to assess the effectiveness of the OU2 Area GES in achieving hydraulic containment. Monitoring wells located downgradient of the OU2 Area GES that were previously impacted should respond differently over time than monitoring wells located upgradient and within the zone of capture. The timing and occurrence for this response is variable because of a number of contributing factors. These contributing factors include the original contaminant concentration, the aquifer hydraulic parameters at the specific monitoring location, regional water level fluctuations, and variations in mass flux related to the location of the monitoring point along the groundwater flow path. All of these factors can affect water quality over time. Assuming the remediation system is containing groundwater, and absent any new localized sources, then groundwater quality in monitoring wells located downgradient of the GES should decline in response to the discontinuation of contaminant mass flux into the area from upgradient sources. Monitoring wells located upgradient, and within the capture zone, reflect impacts of upgradient concentrations moving towards the extraction wells, the nature and magnitude of the changes being dependent upon the flow path on which they were located. Even if an upgradient well located within the capture zone shows increasing concentrations over time, these increases have no relation to the operation and effectiveness of the downgradient OU2 GES, and the well's flow path endpoint will eventually be an extraction well. The OU2 Area GES has been in operation since 2001, providing sufficient time to clearly show changes in downgradient groundwater quality attributed to the operation of the OU2 Area GES.

Chemistry (contaminant) trends were evaluated based on observed data (as discussed in Section 3.2.3) and statistical analysis; the results from these analyses are briefly summarized in Sections 3.3.5.1 (statistical analysis) and 3.3.5.2 (trends upgradient versus downgradient) below.

3.3.5.1 Statistical Analysis

This section summarizes statistical analyses performed to quantitatively evaluate trends in chemical concentrations over time at monitoring wells within OU2. Trend analyses were conducted for each of the five primary VOCs (PCE, TCE, cis 1,2 DCE, 1,1 DCE, and 1,1 DCA). The trend analysis utilized the Mann Kendall trend test, which is commonly applied to environmental monitoring data (Helsel and Hirsch, 1992; EPA, 2006). The Mann Kendall test identifies whether there is an increasing or decreasing concentration trend, or if a statistically significant trend cannot be determined for each of the tested parameters. Because some of the VOCs evaluated are degradation by products of other constituents, in settings where biodegradation is occurring, it is possible to observe no detectable or declining concentration in the parent compound, but observe an increasing or decreasing concentration in the daughter compound. The full details of the trend analysis are presented in **Appendix F-1**.

In implementing the Mann Kendall trend test, a significance level of 0.05 (95 percent confidence) was used for data sets with more than four samples. A significance level of 0.10 (90 percent confidence) was applied for data sets with four samples, because it is not mathematically possible to achieve 0.05 significance with only four samples. No test was performed with three or fewer data points. For the purposes of performing the Mann Kendall trend test, non-detects were considered to be tied (i.e., equal) values with lower concentrations than the detected observations. For convenience, a value of zero was used for the non-detects, although any value below the lowest



detected result would yield identical ranking in the Mann Kendall trend test (which as a non-parametric method considers only whether a certain observation is above or below another and not the magnitude of the difference). This assumption was made in order to prevent any variation in detection limits influencing the Mann Kendall trend test results.

A total of 95 wells monitored within the OU2 Area and the eastern portion of OU3 (just downgradient of the OU2 GES) were analyzed for data suitability for trend tests. Wells that had four or more samples collected, provided they were last sampled in 2017, with positive detections in 50 percent or more of the results for at least one analyte, were selected for trend analysis. Of the 95 wells monitored, 56 wells were selected for trend analysis based on the criteria described above. The date of commencement of monitoring, as well as sampling frequency, has varied by well, with data collected between 2001 and 2017 (all data collected since startup) and between 2010 or 2013 and 2017 (including the last 5 years of data for wells sampled semi-annually or 8 years of data for wells sampled annually) being considered when carrying out the trend tests. The number of samples available by well varied between 3 and 46 (shown in Table 1 of **Appendix F-1**). A detailed discussion of the results of the statistical trend analysis for wells sampled in the past 8 years (sampled annually) in addition to wells sampled in the last 5 years (sampled semi-annually) is presented in Section 3.3.5.1.

The trend test results are shown in Table 1 in **Appendix F-1**. From a total of 95 wells considered, 12 wells consisted entirely of data not suitable for trend tests due to low percentages of detected results (CRA01, NW04-D, NW10-D, OU312-D, EW22-D, NW08-D, NW12-D, OU312-D, OU313-D, NW01, NW09-M, and NW13-M). In addition, 13 wells were not sampled in 2017 (AS02, EW13-168, EW19-S, OU314-M, PZ01-A, DM515-115, EW13-268, EW21, OU320-M, DM515-265, EW19-D, NW15-S, OU320-S). Thus, the remaining 56 wells were selected for trend analysis as outlined below.

Overall Trends (2001 – 2017)

The results of the trend tests are shown in Table 2 in **Appendix F-1**, and depicted spatially on Figure D.1a for the SRG and Figure D.2a for the BF, respectively (**Appendix F-1**). From the 56 wells selected, 280 data sets were considered for trend analysis (56 wells x 5 analytes). Ninety-two data sets representing 44 wells had more than 50 percent non-detects; and therefore, were not suited for trend tests. Sixty-four data sets representing 29 wells did not have statistically significant trends observed. Statistically significant trends ($P < 0.05$, i.e., greater than 95 percent confidence) were observed for 188 data sets representing 56 wells, including all five chemicals (TCE, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, and PCE). Decreasing trends were identified in 100 of the 188 data sets with significant trends, including data from 37 wells. Most notably, 14 sentinel monitoring wells and wells downgradient of the capture zone in both the SRG and BF (listed in Table 2 of **Appendix F-1**) show decreasing trends or have results below the detection limit. The results over the 15+-year operation of the OU2 GES from these downgradient and sentinel wells support the conclusion that the OU2 GES had been effectively capturing the complete plume width in both the SRG and BF until recently.

As discussed in **Appendix F-1**, increasing trends were observed for 24 data sets, representing 10 wells (ASE76-B, BC11-A, NW19-D, NW23-S, NW23-D, DM509, DM515-210, NW06-D, EW07,



NW25-S). All the wells with increasing trends, except for monitoring well NW19-D, are located upgradient and/or within the capture zone of the OU2 GES.

The current trend results are compared to those found in the last evaluation (GHD, 2016a) in the final column of Table 2 in **Appendix F-1**. In most cases, the trend test conclusions are identical. For 2017, four data sets representing two wells (NW16-M, NW08-S) were newly identified as having significant decreasing trends, where no statistically significant trend was present during the 2016 data evaluation. For 2017, six data sets from six wells, (ASE76-B, BC11-A, DM509, NW19-D, NW23-S, and NW23-D), located upgradient and within the OU2 GES capture zone were identified as having significant increasing trends for 1,1-DCE and six data sets from six wells for TCE (ASE76-B, DM515-210, EW07, NW19-D, NW23-S, and NW25-S), where no statistically significant trend was present during the 2016 data evaluation.

Recent Trends (2010/2013 – 2017)

Results from the recent period (2010/2013-2017) trend tests are shown in Table 3 in **Appendix F-1**. The same 56 wells and resulting 280 data sets used in the overall trends evaluation were considered for the recent trend analysis. For ease of comparison, the final column of Table 3 in **Appendix F-1** repeats the trend conclusions for the overall period (2001-2017 data).

Of the 280 datasets tested, there were 104 data sets not suited for trend testing because these had more than 50 percent non-detects. Of the 176 remaining data sets for which temporal trend tests were carried out, 90 data sets had no statistically significant trends. Thirty-five data sets had statistically significant decreasing trends (Probability <0.05, i.e., greater than 95 percent confidence). The increasing trends (51 data sets in 23 wells) identified included: ASE76-A, ASE76-B, ASE77-A, ASE86-A, EW06, EW07, EWS, NW03, NW06-S, NW07-S, NW08-S, NW08-M, NW09-D, NW11-M, NW11-D, NW14-M, NW14-D, NW18-S, NW19-M, NW19-D, NW23-S, NW23-D, and NW25-S.

Most of the wells listed above are located upgradient or within the OU2 GES capture zone, with the exception of the following SRG wells NW07-S, NW14-M, NW18-S, and NW19-M, and BF wells NW09-D, NW11-D, NW14-D and NW19-D.

Overall decreasing concentration trends from 2001 to 2017 in wells downgradient of the OU2 GES in the SRG and the BF indicate that hydraulic containment has historically been effective at containing mass. The recent transition to increasing concentrations in downgradient wells NW07-S, NW09-D, NW11-D, NW14-D/M, NW18-S, and NW19-M/D indicates that containment of the full width of the plume has not been maintained in recent years, likely a result of the observed decline in regional water levels and associated decrease in extraction rates.

3.3.5.2 Trends Downgradient

In addition to the statistical trend analysis, TCE concentration graphs were prepared to illustrate and compare the TCE contaminant trends for wells downgradient of the OU2 Area GES. The locations of the wells are shown on **Figure 3.7** (SRG) and **Figure 3.8** (BF). Wells were selected to support the hydraulic capture evaluation in each of the subunits of the OU2 Area GES. TCE concentration graphs are presented as Figures F.3 for SRG wells and F.4 for BF wells (**Appendix F-2**).



Five SRG wells depicted in Figure F.3 are located downgradient of the OU2 Area GES capture zone: NW04-S, NW07-S, NW07-M, NW14-M, and NW18-S. Each of these wells has an overall decreasing TCE trend (from installation to 2017) or no trend identified. The statistical trend (see Tables 2 and 3 in **Appendix F-1**) for these five SRG wells for the periods 2001-2017 and 2010/2013-2017 for TCE is decreasing or has no statistical trend. Of the five downgradient wells, however, one (NW19-M) displayed a trend that shows a slight increase since 2012, suggesting that there has been a recent change in the extent of hydraulic containment in the south. Recent TCE concentrations have shown variability in NW07-S and NW07-M; however, there is not a discernable trend as concentrations in downgradient wells NW07-S, NW07-M, and NW14-M remain non-detect or below MCL. TCE concentrations in NW18-S have increased to levels above the MCL; this recent increasing TCE trend suggests that there may be an issue with the continuous extent of hydraulic capture in the central portion of the Site in the vicinity of the Airport Ridge related to the reduction in extraction rates in response to the declining water table.

Three BF wells depicted in Figure F.4 in **Appendix F-2** are located downgradient of the OU2 Area GES capture zone: NW07-D, NW13-D, and NW14-D. These three wells have a decreasing TCE trend or no trend identified. NW14-D, which is located outside the OU2 GES capture zone, has had an overall decreasing TCE trend, but an increasing trend has been observed over the last 5 years. Monitoring well NW19-D, also located outside the OU2 GES capture zone, has had an overall increasing trend, with a TCE concentration increase from 2016 to 2017. TCE has not been detected or detected at very low concentrations below the MCL in downgradient OU3 BF screened monitoring wells OU312-D, OU313-D, OU314-D, EW-228, and EW13-268, which are located downgradient of wells NW14-D and NW19-D.

Historically, the OU2 GES has been successful at containing the TCE plume and reducing concentrations throughout the GES Area, but more recently it appears that low levels of TCE are migrating past the hydraulic capture zone (in the southern portion of the OU2 GES Area and in the area of NW18-S). As discussed in Section 7, potential contingent remedial measures are proposed to be implemented in these areas.

3.3.6 Conclusions

Based upon the evaluation of the multiple converging lines of evidence, the following conclusions are made:

- The volume of water extracted from the OU2 GES exceeds the calculated natural flux of water through the plume area plus the additional safety factor recommended by EPA. However, the OU2 extraction wells are no longer aligned in the center of the plume due to the reduction of plume width to the north. As such, a portion of the extracted water is being produced from an area north of the plume boundary rather than from the observed extent of impacted water.
- The maximum calculated capture zone width upgradient of the OU2 GES exceeds the calculated average plume width for the SRG and BF. However, the observed reduction in plume width is primarily occurring along the northern plume boundary. As such, the plume centerline has shifted and the OU2 extraction wells are no longer aligned in the center of the plume. The calculated width would be similarly off-set to the north and would not extend to the observed southern plume boundary.



- Potentiometric surface maps and groundwater flow lines for September 2017 demonstrate that hydraulic containment of most of the plume width (TCZ) is achieved in SRG. The estimated capture zone extends from north of monitoring well EW-07 to south of monitoring well NW-11M.
- Potentiometric surface maps and groundwater flow lines for September 2017 demonstrate that hydraulic containment of only the northern portion of the observed plume is achieved in BF. The estimated capture zone extends from north of monitoring well NW12-D to south of monitoring well NW16-D.
- Groundwater contours in cross-sections demonstrate that inside the capture zone, the entire depth of the plume (TCZ) is contained by operation of the OU2 Area GES.
- A comparison of TCE concentrations from Baseline (September 2001) to September 2017 shows an overall decreasing TCE plume width in the vicinity of the OU2 Area GES. The reduction in the width of the TCE plume after continued operation of the OU2 Area GES is expected due to the localized groundwater flow direction changes in response to the OU2 Area GES pumping and the overall decrease in VOC concentrations.
- Overall decreasing trends in downgradient monitoring wells indicate that the OU2 GES has historically been successful at containing the TCE plume; however, based on increasing trends recently observed in certain downgradient monitoring wells, it appears that low levels of TCE are migrating past the target hydraulic capture zone in the southern portion of the OU2 GES area (south of monitoring well NW11-M in the SRG and south of NW16-M in the BF). Additionally, increasing TCE concentrations in NW18-S suggests that there may be an issue with the continuous extent of hydraulic capture in the central portion of the Site in the vicinity of the Airport Ridge related to the reduction in extraction rates in response to the declining water table. As discussed in Section 7, potential contingent remedial measures are proposed to be implemented in these two areas.

4. OU2 Area GES Operations and Operational Assessment

4.1 OU2 GES Operations

GHD continued O&M of the groundwater extraction, treatment, and discharge system on behalf of the Companies.

4.1.1 Operational Uptime and Shutdowns

Groundwater extraction, treatment volumes and run times for the reporting period are summarized in **Tables 4.1** and **4.2**, respectively. Daily groundwater extraction, treatment volumes and run times by month are provided in **Appendix G**. A summary of the monthly uptime percentages is provided in **Table 4.3**. The operational uptime is recorded from the GES's SCADA system.

A summary of the extraction well/treatment system shutdowns greater than 30 minutes in duration is provided in **Appendix H**. Additional detail on longer term system shutdowns is presented below.



The GES was shut down from January 6, 2017 to February 6, 2017, for the scheduled SRP Grand Canal dry up and annual maintenance shutdown, and from February 10, 2017 to March 18, 2017, as requested by SRP, due to excessive stormwater inflows into the Grand Canal and/or releases into the Salt River channel. These two shutdowns resulted in a total of 65 days with no active groundwater extraction/treatment. Preventative maintenance activities were performed during the shutdown periods.

The GES was shut down on April 13, 2017, to isolate and repair a leak from the effluent (treated water) line after it was struck near the intersection of 24th Street and Roosevelt Road by a horizontal directional drilling contractor. The GHD construction group began repair work to the damaged OU2 effluent line on April 18, 2017, after coordinating with various vendors and governmental agencies for an expedited repair. The repair work consisted of asphalt removal and excavating down to the damaged effluent line (approximately 8 to 9 ft bgs). When the asphalt was removed, a large void caused by the rapid release of water from the pipeline was observed above the effluent line. The effluent line was fully excavated and exposed on April 20, 2017, and an approximately 3 to 3.5-inch diameter hole was observed in the pipe.

On April 21, 2017, the hole in the pipe was cleaned and filled with an epoxy putty to repair the damage to the concrete lining of the effluent line. A stainless steel repair clamp was installed over the hole once the epoxy putty had dried. The effluent line was then pressure/leak tested at normal operating pressure for 2 hours with no leakage observed. The excavation was then backfilled with a half sack of ABC slurry, in accordance with City of Phoenix (COP) requirements, and the OU2 Treatment Facility was restarted on April 21, 2017. The asphalt over the area of the effluent line strike was repaired on April 26, 2017. This shutdown resulted in 7 days with no active groundwater extraction/treatment.

In total, extraction/treatment did not occur on 72 days during 2017 (approximately 20% of 2017) due to the planned and unplanned shutdowns detailed above.

4.1.2 Set Point Changes

Extraction well flow rate set points changed for wells EWN, EWM, and EWS during the reporting period. The flow rate set points for all three extraction wells were reduced to 0 gpm from January 5, 2017 to February 6, 2017, during the annual maintenance shutdown. At system restart (February 6, 2017), the set points for EWN, EWM, and EWS were increased to 425 gpm, 800 gpm, and 275 gpm, respectively. During this shutdown period, preventative maintenance of the OU2 Area GES was performed to maximize runtime during the remainder of the year.

The flow rate set points for all three extraction wells were reduced to 0 gpm from February 10, 2017 to March 18, 2017, due to the SRP-mandated shutdown described in Section 4.1.1. At system restart (March 18, 2017), the set points for EWN, EWM, and EWS were increased to 430 gpm, 760 gpm, and 285 gpm, respectively.

The flow rate set points for all three extraction wells were reduced to 0 gpm from April 13, 2017 to April 21, 2017, due to the effluent line utility strike described in Section 4.1.1. At system restart (April 21, 2017), the set points for EWN, EWM, and EWS were increased to 440 gpm, 680 gpm, and 285 gpm, respectively.



Several flow reductions occurred from wells EWN, EWM, and EWS from the last system restart to December 31, 2017, due to the drop in regional aquifer water levels (available for extraction). Groundwater extraction well flow rate set point changes are summarized in **Table 4.4**.

4.1.3 Groundwater Treatment

Approximately 568 million gallons of groundwater were extracted and treated at the 20th Street Groundwater Treatment Facility during 2017. All flow volumes are recorded from the groundwater extraction, treatment, and discharge system's SCADA system. The monthly combined influent flow is computed by adding the monthly influent flow from each extraction well as recorded on the SCADA system. The manufacturer's stated accuracy for the flow meters is plus or minus 2 percent; therefore, there could be up to a 4 percent difference in the total influent and effluent flow volumes and still be within the manufacturer's accuracy for flow measurement. The total volumes for the month are calculated by adding the daily volumes recorded by the SCADA system.

4.1.4 Process Sampling and Data Validation

GHD coordinated the monthly performance sampling of the treatment system combined influent and submitted samples to the project laboratory for analyses. Analytical results of the treatment system combined influent performance samples for the reporting period are summarized in **Table 4.5** and **Table 4.6**. Analytical results of the facility discharge performance samples for the reporting period are summarized in **Table 4.7**. Process sampling laboratory analytical reports and field sample keys are located in **Appendix A**, and data validation reports are located in **Appendix B**.

4.1.5 Other Sampling – Grand Canal

GHD coordinated the annual performance sampling of the treated water discharge location at the Grand Canal as part of the agreement with SRP, and submitted the samples to the project laboratory for analyses. Analytical results of the treated water discharge location for the reporting period are summarized in **Table 4.8**, **Table 4.9**, and **Table 4.10**.

GHD conducted the semi-annual sampling events for boron of the treated water discharge to the SRP Grand Canal and the water in the SRP Grand Canal for additional boron concentration data on March 20, 2017 and September 5, 2017. The analytical results are included as **Table 4.11**. Sampling locations are depicted on **Figure 4.1** and **Figure 4.2**.

4.1.6 GAC Operations and Change-outs

The GAC treatment system was operational during 2017. Because of the gradual reduction in extraction well pumping rates (due to regional aquifer water level declines), the number of on-line GAC pairs was maintained at three pairs with a fourth pair as a "spare". GHD coordinated the monthly performance sampling of the primary GAC vessels effluent and submitted the samples to the project laboratory for analyses. GAC Units 1, 3, and 9 were not in use during 2017 and were not sampled. The sample is collected after the primary (lead) GAC vessel, and prior to the secondary (lag) GAC vessel, in accordance with Section 7.2.8.1 and Section 7.2.8.2 of the revised O&M Manual (CRA, 2011). The analytical results are included as **Table 4.12**. Carbon change-outs and removal of spent carbon from GAC vessels occurred in May, August, and November/December 2017, and are summarized in **Table 4.13**.



4.1.7 UV Oxidation Treatment

The UV oxidation system was not required to operate during the reporting period, as vinyl chloride was not detected in the influent groundwater and/or in upgradient groundwater monitoring wells. Vinyl chloride has never been detected in the influent groundwater. Additionally, it was not necessary to adjust VOC concentrations to control carbon utilization rates. The Start-up Report (CRA, 2002a) provided an assessment of the UV oxidation system for treatment of VOCs.

The UV oxidation system operated temporarily November 13 through 15, 2017, as a routine preventative maintenance measure to test the operability of the system. No hydrogen peroxide (used as part of the UV oxidation system) was stored on Site during 2017. Typically, hydrogen peroxide can be delivered within a week of placing the order, if it is needed.

4.2 Operational Assessment

During 2017, the sampling and analytical schedule detailed in the revised O&M Manual (CRA, 2011a) was implemented. **Appendices H through L** provide supporting information associated with the Operational Assessment presented in this section. Approximately 568 million gallons (1,743 acre-ft) of water was treated in 2017 by the OU2 Area GES. From startup in 2001 through 2017, over 16.0 billion gallons (49,164 acre-ft) of water has been treated by the OU2 Area GES and discharged to an SRP-operated canal for irrigation purposes and beneficial re-use. All of the treated water met the discharge water quality standards for VOCs during 2017, consistent with every year of GES operation. The concentration for boron at the downstream monitoring point met the discharge criteria.

The OU2 Area GES removed approximately 197 pounds of VOCs in 2017 (0.35 pounds per million gallons), and has removed a calculated total of 15,124 pounds from start-up (approximately 0.94 pounds per million gallons). Included in **Appendix K** (pages K-1 and K-2), are charts showing the cumulative and monthly VOC mass removed from the extracted groundwater, as well as the cumulative and monthly volume of groundwater treated. In addition, included in **Appendix K** are tables summarizing the total cumulative volume of groundwater treated and total cumulative VOC mass removed from the extracted groundwater annually (Table K.1, page K-3), as well as the monthly volume treated and monthly mass removal for the reporting period (Table K.2, page K-4).

Total VOC concentrations in the OU2 GES influent water have decreased from time of start-up to December 2017. In December 2001, the baseline combined influent VOC concentration was 295.9 µg/L. In December 2017, the combined influent VOC concentration was 37.9 µg/L (**Appendix K**, page K-4).

From time of start up until the end of 2004, the annual amount of water treated by the OU2 GES decreased due to a reduction in extraction well flow rates as a result of declining water levels in the alluvial aquifer (**Appendix K**, Table K-1). In 2004, there was a temporary flow change (operating only wells EWM and EWS). From 2005 until the end of 2013, however, the annual amount of water treated by the GES remained relatively constant (approximately 1.0 billion gallons per year). In 2016 and 2017, approximately 600 and 570 million gallons, respectively, were pumped. As discussed in Section 3.0, sufficient groundwater was pumped in 2017 to maintain VOC plume containment based on the presented flux analysis.



The annual amount of VOCs removed from the influent water has decreased from 3,674 pounds at the end of 2002 to 197 pounds in December 2017 in concert with the decreasing trend in influent VOC concentrations (**Appendix K**, page K-3) and the overall decrease in VOC concentrations in each of the alluvial subunits within the OU2 regional plume. **Appendix K**, page K-6 shows the decreasing trend of total influent monthly VOC and TCE concentrations from start up in 2001 until December 2017.

The sections below summarize the performance parameters and trends for the period of January 1 to December 31, 2017.

4.3 Groundwater Extraction

Included in **Appendix E**, are charts of the daily average system flow rates superimposed on the extraction well hydrographs and concentration trends of select VOCs for each extraction well plotted against time. Analytical data for the extraction wells and the combined influent for 2017 were provided in the monthly progress reports submitted to the Agencies.

4.4 Granular Activated Carbon Treatment

Three pairs of GAC adsorbers (primary and secondary) were in operation during the majority of 2017, to maintain an optimum flow rate (5 to 7 gpm/ft²) through each GAC pair, with a fourth pair available as a spare. The fourth pair of GAC vessels was on standby and rotated in and out of operation to maximize the life/use of carbon in all of the operating vessels. Included in **Appendix J**, are charts showing the trends of VOC concentrations after treatment by the primary GAC adsorber and prior to final treatment by the secondary GAC adsorber. Analytical results are also summarized in **Table 4.12**. The VOC results after the secondary GAC treatment are discussed in Section 4.5. Carbon change-outs of GAC units in 2017 are summarized in **Table 4.13**. Carbon change-outs are scheduled when the concentration of a VOC in the groundwater exceeds the allowable discharge concentration after treatment by the primary carbon adsorber, and prior to final treatment by the secondary carbon adsorber.

Based on evaluation of the influent and effluent data, a “roll-over” effect is, and has been occurring for the compound 1,1-DCE. This phenomenon is caused by the TCE preferentially adsorbing to the carbon and pushing any adsorbed 1,1-DCE off the carbon and through the carbon bed. The 1,1-DCE accumulates in the carbon and eventually exits the carbon at a concentration higher than the influent concentration. This requires more frequent carbon change-outs to treat the 1,1-DCE buildup in the carbon beds. The Companies use a mixture of coconut-based carbon from Evoqua Water Technologies LLC (Evoqua), and re-agglomerated carbon from Calgon Carbon Corporation (Calgon). These carbons function more efficiently with the compounds that roll over, when compared to coal-based carbon.

Evoqua regenerated the GAC at their Red Bluff, California regeneration facility following carbon change-outs during 2017. Copies of the manifests and certificates of destruction are included in **Appendix L**. After a carbon change-out, the secondary GAC units are switched to primary units, and the GAC units with the regenerated carbon become the secondary GAC units. The status of the GAC units at the end of 2017 is provided in **Table 4.12**. Based on the treatment facility allowable



discharge concentrations presented in Section 4.5, the GAC continues to provide effective treatment of the extracted groundwater.

Entrained air collecting in the carbon of the primary GAC adsorbers, causing the GAC to become “blinded” by the air as discussed in previous annual reports, was not a significant problem in 2017. Backwashing of the primary GAC units was similar (in frequency and amount of water) in 2017 when compared to 2016, and there was no evidence of an increase in entrained air in the groundwater from the extraction wells or in the combined influent samples.

The backwashed water was discharged to the backwash wastewater (BWWW) tank and subsequently to the COP sanitary sewer. In addition, after each carbon change-out, the new carbon was backwashed to remove the carbon fines prior to placing it into service. The backwash water generated during the fines removal process was also discharged to the BWWW tank and subsequently to the COP sanitary sewer. Backwash water volumes discharged to the COP sanitary sewer for the reporting period are summarized in **Table 4.1**. Quarterly analytical results of the backwash water discharged to the COP sanitary sewer during the reporting period are summarized in **Table 4.14**. The discharges to the COP sanitary sewer met all of the COP sanitary sewer discharge requirements during the 2017 reporting period.

4.5 Facility Discharge

As required by Section B.1.4.1 of the OU2 Remedial Design CD SOW, Section 2.B. of the OU2 Interim Remedial Action CD SOW, and confirmed in the Final (100%) Design Report (CRA, 1999) approved by the Agencies, the CD SOW requires the extracted water to be treated so that the effluent water meets the applicable standards at the point of compliance. The applicable standards at the point of compliance and a summary of the analytical results for the treatment facility discharge are provided in **Table 4.7**. The results of discharge monitoring indicate that the OU2 treatment facility treated all of the extracted groundwater to below the treated groundwater discharge standards for VOCs prior to discharging into the Grand Canal.

4.6 Grand Canal

In accordance with the agreement between the Companies and the Salt River Valley Water Users Association relating to the discharge of treated groundwater from the OU2 treatment facility into the SRP Grand Canal, the treated groundwater discharged to the Grand Canal was sampled monthly in 2017. A summary of the monthly VOC analytical results for the treated groundwater discharged to the SRP Grand Canal is provided in **Table 4.7** and **Table 4.8**, and indicates treatment of the extracted groundwater to below the treated groundwater discharge standards for VOCs (see Section 4.4). Also, in accordance with the agreement, the treated groundwater discharged to the Grand Canal is required to be analyzed once a year for select metals and general chemistry parameters. The annual sampling of the groundwater discharge to the Grand Canal for these parameters was performed on September 5, 2017, and analytical results are provided in **Tables 4.9** and **4.10**, respectively.

As mentioned in previous Effectiveness Reports (beginning in 2010), the groundwater pump and treatment operation is being conducted as a response action at a federal Superfund site and no Arizona Pollution Discharge Elimination System (AZPDES) permit is required; however, the



substantive provisions of the AZPDES program must be met. The OU2 interim groundwater remedy extraction wells have naturally occurring levels of boron in excess of ADEQ's surface water quality standard for agricultural irrigation.

In a letter dated July 2, 2009, the Companies indicated that they would implement a monitoring program to demonstrate that the discharge of the treated OU2 water does not cause the water quality within the SRP Grand Canal to exceed the applicable irrigation standard for boron, in light of the public concerns that were raised. Included with the letter was an AZPDES Mixing Zone Application and a mixing zone calculation technical memorandum which presented data used to calculate the minimum mixing zone length at which the boron concentration will be below the regulatory standard of 1 milligram per liter (mg/L) (CRA, 2009b). The mixing zone calculations and analytical results indicate that there is adequate mixing in the Grand Canal within 500 meters of the OU2 treatment system discharge point for the concentration of boron to be in compliance with the applicable regulatory standards.

Surface water samples for boron analysis are collected at the OU2 Discharge Point to the Grand Canal, upstream (470 ft upgradient) of the OU2 Discharge Point, and downstream (approximately 800 ft downgradient) of the OU2 Discharge Point (compliance points). Sampling has been conducted quarterly in 2010 and 2011 and semiannually since 2012, because the boron results have been below the action limit (1 mg/L) in the downstream sampling point and have continued to meet the mixing zone requirements (ranging from 0.22 mg/L to 0.38 mg/L for 2017). Analytical results for the semi-annual boron samples conducted in 2017 are provided in **Table 4.11**.

ADEQ conditionally approved the Companies' Mixing Zone Application in a letter dated September 2, 2009, and requested a contingency plan. In a letter dated October 2, 2009, the Companies submitted a proposed contingency plan addendum (added in Section 8.0 of the revised O&M Manual [CRA, 2011a]) to the mixing zone calculations and monitoring plan in the event that the treated groundwater discharging to the Grand Canal exceeds the discharge criteria beyond the mixing zone (CRA, 2009c).

4.7 Evaluation of Scaling Tendency of Extracted Groundwater

During the OU2 design phase, evaluation of the groundwater chemistry indicated that the groundwater is over-saturated with respect to calcium carbonate (CaCO_3), and that formation of calcium scaling may occur in the pipelines and treatment system. To mitigate the potential for scaling, the Final (100%) Design Report included an acid injection system at the treatment facility to adjust the pH of the extracted groundwater prior to treatment. During construction of the treatment facility in 2000, a Technical Memorandum (CRA, 2000) recommending delaying the installation of a pH control system, was submitted to, and approved by the EPA. The acid storage tank and all below-grade piping were installed during the construction phase to facilitate future use, if required.

The requirement to install the acid feed system was based on an evaluation of the influent groundwater chemistry for scaling tendency, and on the need for frequent GAC backwashing, as determined during the operation of the treatment system.

The general chemistry and inorganic constituents in the influent groundwater for 2017, as presented in **Table 4.6**, are similar to that reported in the Final (100%) Design Report (CRA, 1999). The



significant calcium concentrations and total alkalinity values, together with slightly higher than neutral pH, indicate that scale forming in the treatment system may occur. Potential scaling was evaluated from the following 2017 groundwater analytical data (**Table 4.6**):

Analytical Parameters	September 2016
Total Alkalinity (as CaCO ₃)	248 mg/L
Calcium (as CaCO ₃) (Hardness)	375 mg/L
Temperature	26°C
Total Dissolved Solids	1,270 mg/L
pH	7.16
Calculated LI	0.140
Note: °C - degrees Celsius LI - Langelier Index	

The calculated LI indicates that the influent groundwater may be scale-producing (Rafferty, 1999). If the calculated LI is less than zero, the water is under-saturated with respect to CaCO₃, and may have a tendency to remove existing CaCO₃ protective coatings in pipelines and equipment. If the LI is equal to zero, the water is considered to be neutral, and will be neither scale-producing nor scale-removing. If the LI is greater than zero, the water is super-saturated with respect to CaCO₃ and scale forming may occur. The LI provides no indication of how much scale would be produced.

During the 2017 annual shutdown of the groundwater extraction and treatment system, GHD inspected some of the treatment system piping for scale formation. GHD did not detect extensive scale precipitation/build-up on the treatment system facility piping. Therefore, GHD concludes that treatment of the extracted groundwater to minimize scale formation is not required at this time, and recommends that the influent groundwater chemistry continue to be evaluated annually along with annual visual observation of the treatment facility piping to confirm that additional treatment to mitigate scale precipitation is not required.

5. Maintenance Work and Repair Summary

A summary of the inspections, minor maintenance work, and repairs completed during the reporting period is provided in **Appendix M**. Major maintenance activities completed in 2017 are discussed below.

5.1 Treatment Facility Maintenance

During the first quarter (January through March 2017) of the reporting period, an influent air relief vault was removed and reset after being damaged by a COP water main break on 20th Street just south of Van Buren. A new pump, motor, and four new sections of discharge pipe were installed at EWS after the well was rehabilitated. In addition, the Companies replaced leaking nipples at the EWN pressure gauge and the EWS air release valve and sample port, and replaced a 1-inch x 8-inch section of pipe on the wastewater feed tank going to the influent main.



During the second quarter (April through June 2017) of the reporting period, the ruptured force main at 24th Street and Roosevelt was repaired. The Washington Street swing gate was repaired after being damaged by wind. A new backflow preventer was installed on the irrigation line, a new impeller was installed on the irrigation booster pump, and a cracked irrigation line along the building in the alley behind the facility was repaired. A leaking copper tube on the EWM flow control valve (FCV) was repaired. The EWM level transducer was removed and a replacement was ordered.

During the third quarter (July through September 2017) of the reporting period, the fan run capacitor on the office heating/ventilation/air conditioning (HVAC) unit was replaced. A new level transducer was installed in EWM. A leaking air eliminate valve was repaired on GAC Vessel #6A. New insulation was installed in the office and maintenance shop HVAC units' Freon lines. The HVAC compressor at the EWN electrical building was replaced. A broken section of the 20th Street slide gate was replaced, as well as the circuit board for the facility slide gates. A broken irrigation line on the back side of the facility was also repaired, and the Companies coordinated lining repairs of GAC Vessels #1A, 1B, 3A, 3B, 4A and 4B with epoxy coating with subcontractor.

During the fourth quarter (October through December 2017) of the reporting period, a new impeller, seal plate and diaphragm was installed in the irrigation booster pump. A leaking air eliminate valve was repaired on GAC Vessel #5B. An 8-inch bottom flange was replaced on GAC Vessel 1A. A 4-inch x 6-foot section of leaking fill line on GAC Vessels #8A and #8B was replaced, and a 2-inch nipple and flange on the GAC Vessel #8A bottom vent port was replaced. A leaking pressure equalizing port nipple on the EWM FCV was repaired, and a leaking 2-inch drain valve on GAC Vessel #5A was replaced.

5.2 Extraction Well Maintenance

No major maintenance was conducted at EWN in 2017. No major maintenance was conducted at EWM in 2017.

Well rehabilitation was conducted at EWS in 2017 that consisted of rehabilitation, redevelopment (swabbing, surging, and bailing), and acid treatment. The old submersible pump and motor was replaced with a new pump and motor. During the pump replacement, four corroded sections of the existing column pipe in EWS were replaced with new sections in order to increase the performance of the extraction well.

5.3 Monitoring Well Maintenance

Monitoring wells NW04-S, NW04-D, NW05-S, NW06-D, NW07-D, NW07-M, NW08-S, NW08-D, NW08-M, NW09-D2, and NW12-D were rehabilitated in either March or September 2017, as needed, due to scale build-up on the well screens. The rehabilitation was accomplished by adding Aqua Clear® MGA sulfamic acid solution with acid enhancer in each monitoring well, swabbing to distribute the acid in the water column, allowing the acid to sit in the wells for 24 hours, and then brushing, swabbing, and bailing each monitoring well. All of the acid solution from the wells was pumped out by using a 3-inch Grundfos® groundwater sampling pump. Prior to treatment of the removed acid solution by the treatment system, pH of the removed acid solution was increased to an acceptable pH by adding groundwater generated from the well purging activities. Lid gaskets



were replaced and maintenance was performed on various monitoring well vaults throughout the monitoring well network.

6. Summary and Conclusions

Evaluation of potentiometric surface maps for September 2017 water elevation data indicate that the current projected extent of capture extends from north of the plume boundary in both the SRG and BF south to approximately well NW11-M (in SRG) and south of well NW16-D (in BF). Overall decreasing concentration trends in downgradient monitoring wells and decreasing plume widths observed since start-up indicate that the OU2 GES has historically been successful at containing the TCE plume. However, based on increasing TCE concentration trends recently observed in certain downgradient monitoring wells, it appears that a relatively small mass of TCE appears to be migrating past the target hydraulic capture zone in the southern portion of the OU2 GES area, as well as a small localized area around well NW18-S (in SRG) in the vicinity of the Airport Ridge. As discussed below, contingent remedial measures are being implemented to address these areas.

The 2017 O&M of the 20th Street Groundwater Treatment Facility continued with no significant issues. The discharged water met all discharge standards for VOCs and the system is operating as intended, and is expected to continue to perform as required by the CD.

7. Recommendations

Recommendations for the next year of O&M in 2018 are as follows:

- Maintain the semi-annual groundwater sampling frequency (in March and September to coincide with the ADEQ regional sampling) for VOCs in the OU2 Area GES monitoring wells, as outlined in **Table 7.1**.
- Continue hydraulic monitoring semi-annually for the OU2 Area GES monitoring wells.
- Continue to have operational flexibility of the system and allow adjustments as needed. Such adjustments have been shown to optimize the system performance.
- Implement the pilot study in-situ chemical oxidation (ISCO) work plan (GHD, 2017c) in two areas (in the SRG in areas of wells NW03 and NW18-S, and in the BF in areas of wells NW11-D and NW19-D) as potential contingent remedial measures (as outlined in Section 8.0 of the O&M Manual [CRA, 2011]), that may be appropriate prior to the submittal of the Remedial Investigation/Feasibility Study. Low levels of TCE are migrating past the hydraulic capture zone in the southern portion of the OU2 GES Area and in the area of NW18-S where the extent of capture is incomplete. The work plan focused on the selection of an in-situ treatment remedy enhancement that would reduce the concentrations of Site COCs in groundwater within the pilot test area of the central and southern portions of the OU2 area.

The objectives of the Pilot Study included: i) Confirm the effectiveness of the ISCO treatment under field conditions, ii) Determine to what extent the ISCO treatment can reduce VOC concentrations in the two localized pilot test areas of the SRG and BF, iii) Determine specifications for injections at the Site, including volume, flow rate and pressure, and time and



area of influence, iv) Determine whether the sodium persulfate dose and activator should be adjusted, and v) Evaluate treatment times and determine whether any rebound is observed within the evaluation period.

Periodic monitoring of groundwater within the source areas will be performed to monitor and assess the progress of the ISCO treatment. The work plan was revised and submitted the Agencies on January 10, 2018, and was approved by the Agencies on April 3, 2018.

The 2018 Effectiveness Report will provide additional details regarding the ISCO pilot study work plan implementation and pre- and post-ISCO injection results and analysis.

- The Companies are preparing a proposed plan to provide a long-term response for the central portion of the Site that will also help mitigate any potential future impact to OU3.

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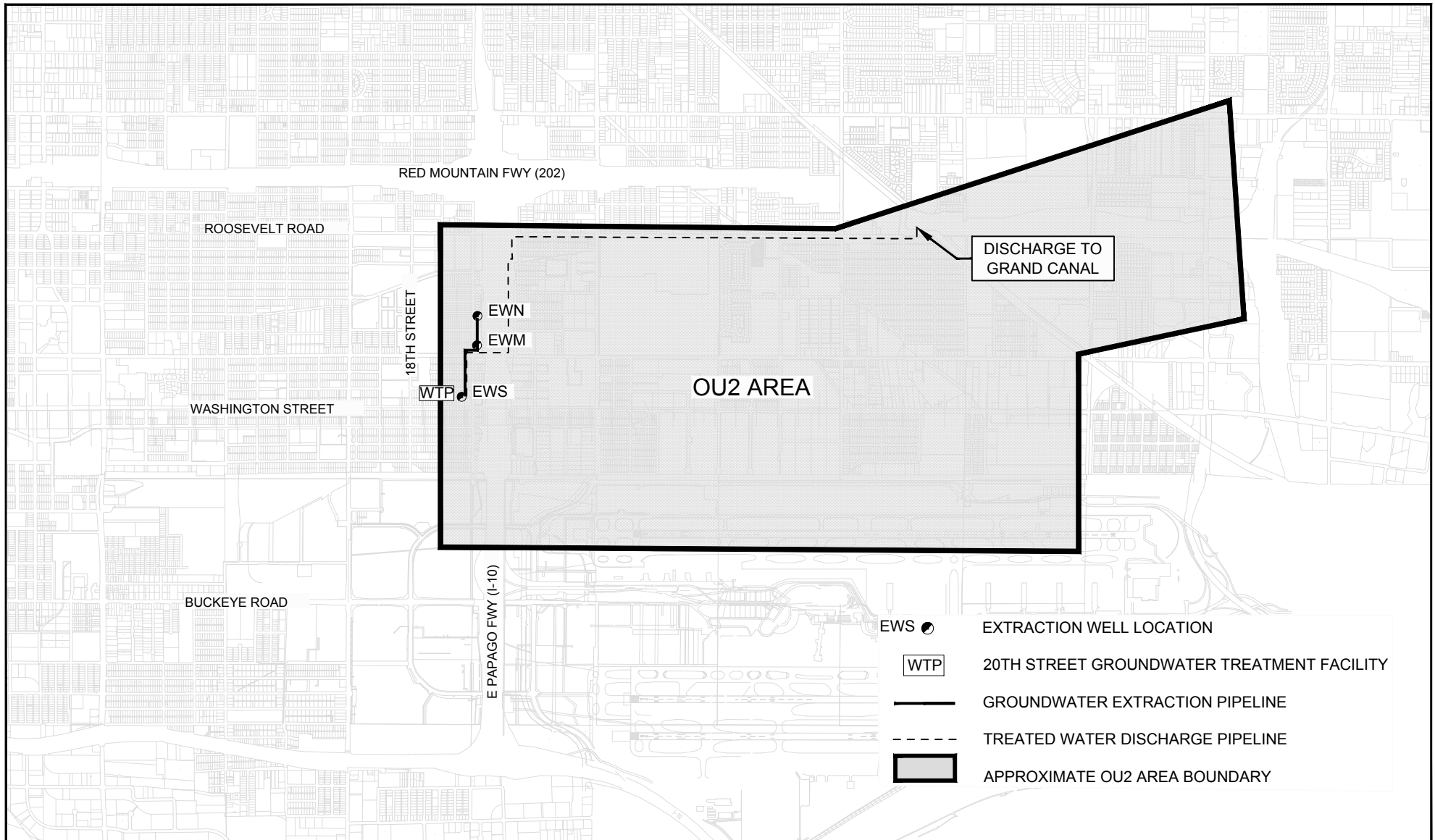


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Figures



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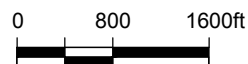
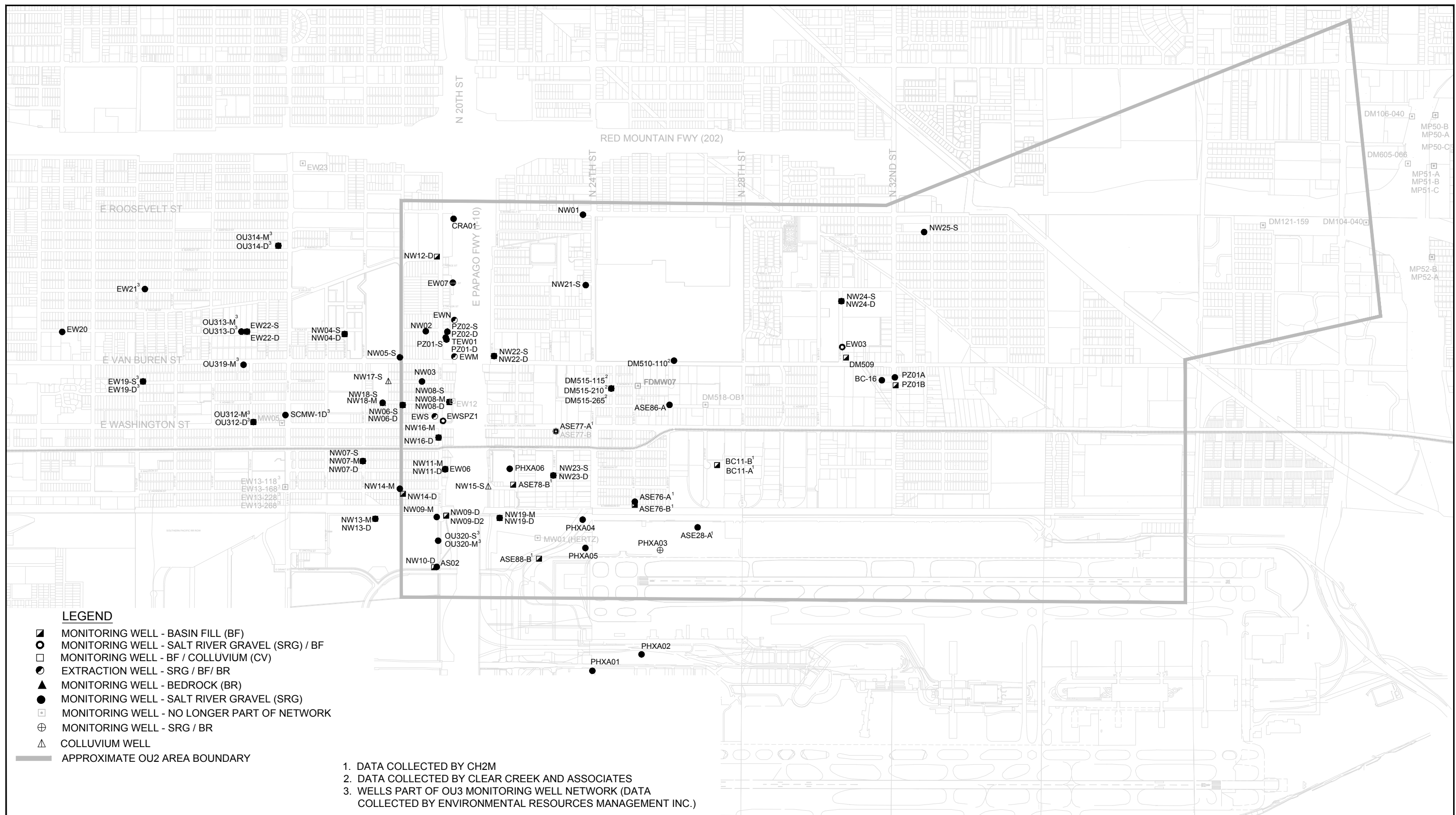
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

SITE LOCATION

013932-151

Jan 3, 2018

FIGURE 1.1



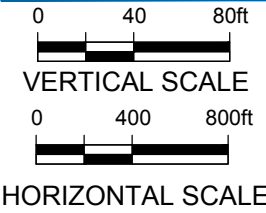
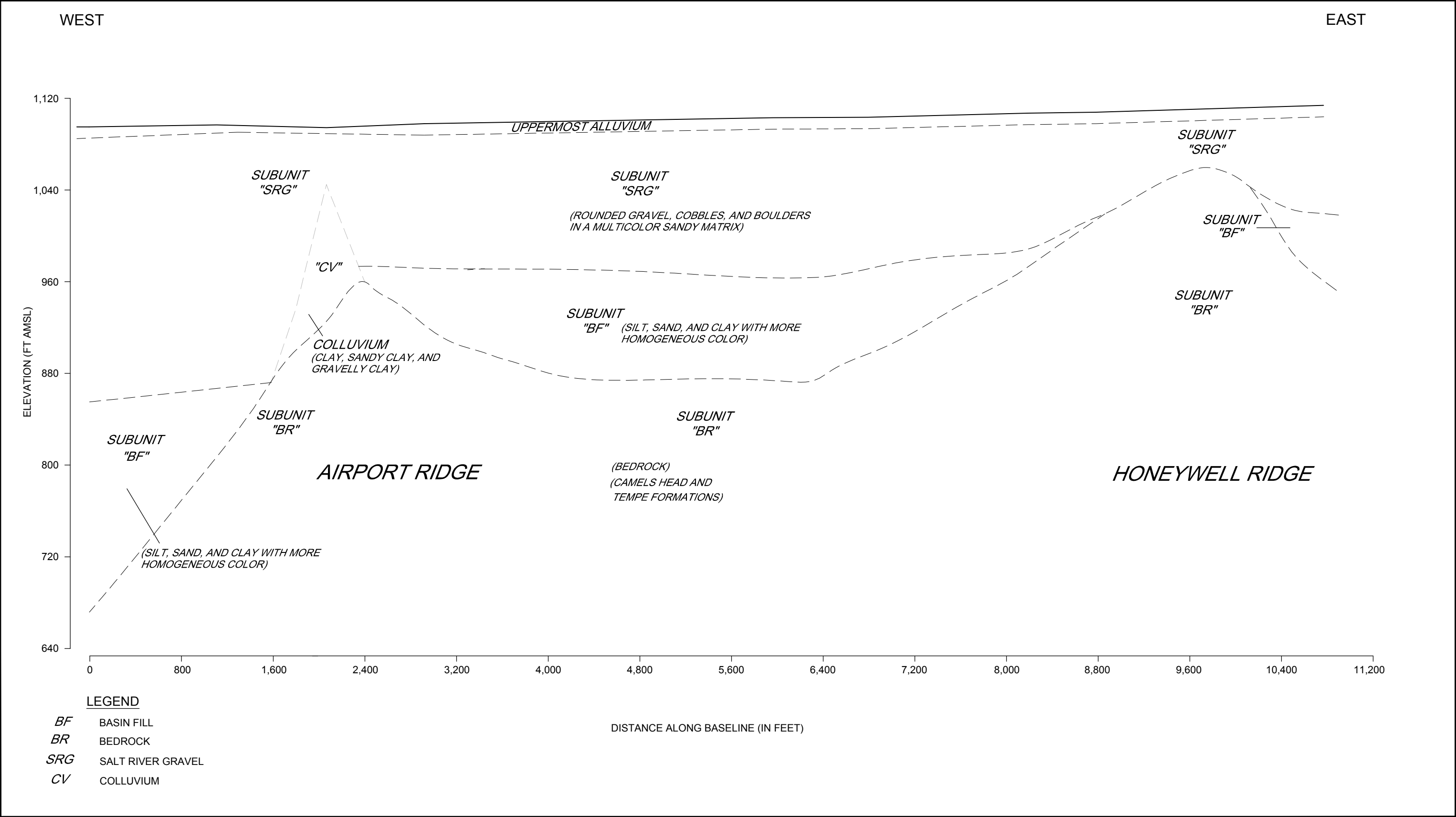
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52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

GES MONITORING WELL NETWORK

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Aug 14, 2018

FIGURE 1.2



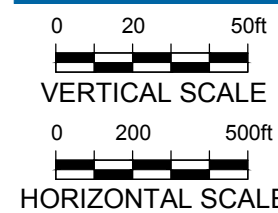
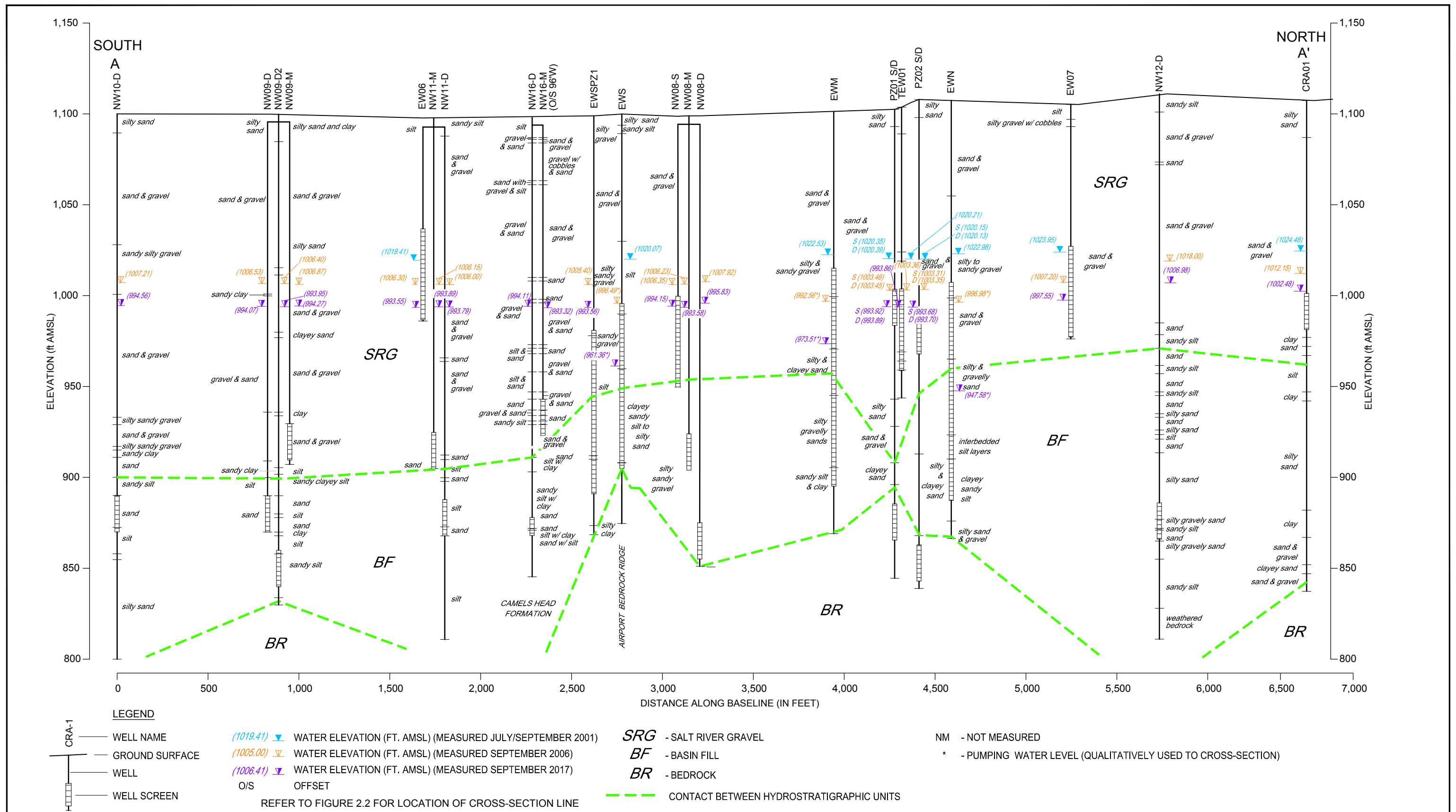
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

SCHEMATIC CONCEPTUAL SITE MODEL

013932-151
Jan 3, 2018

FIGURE 2.1

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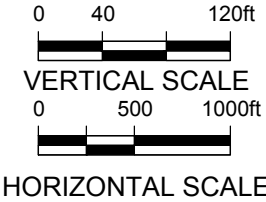
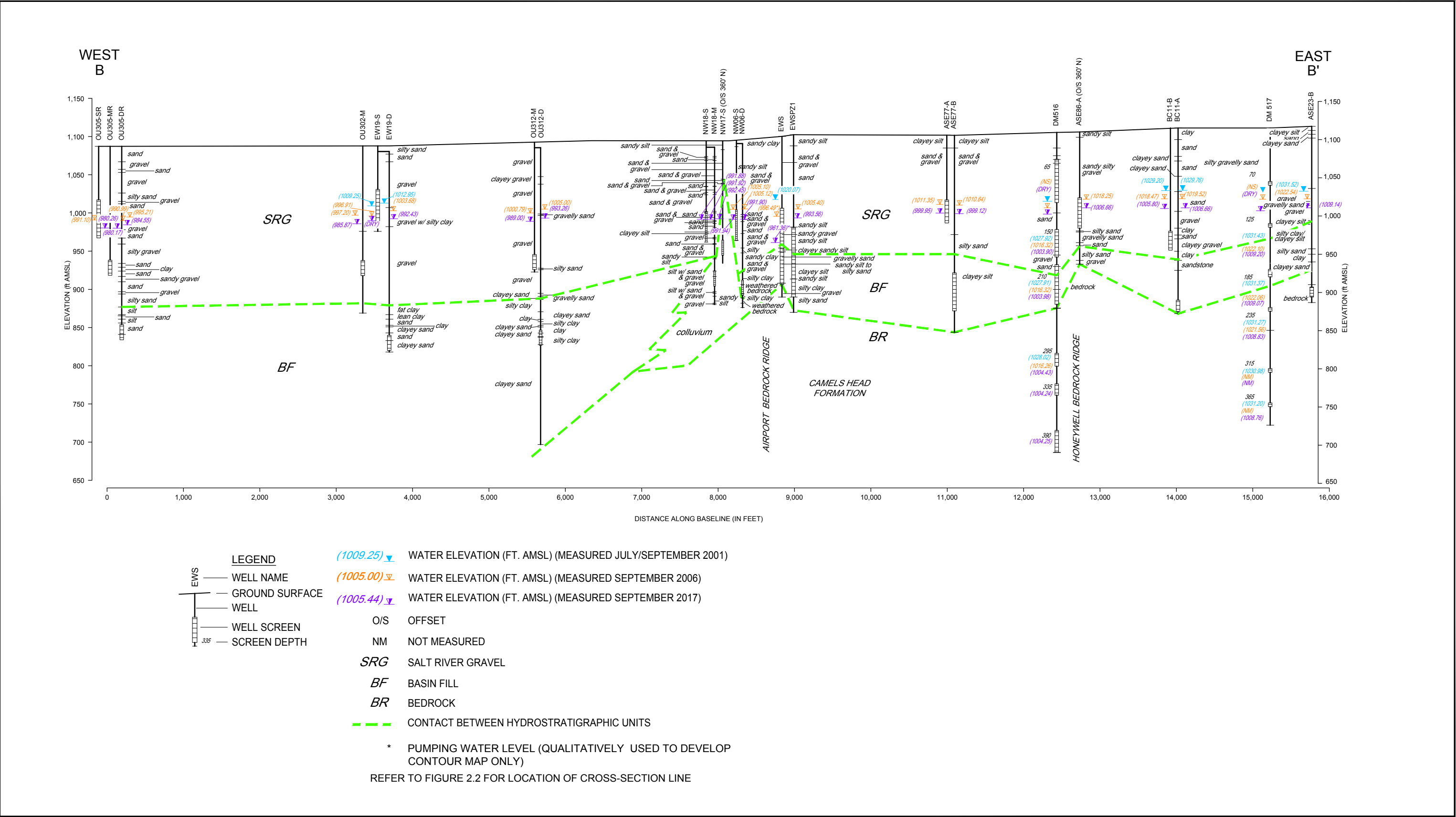


OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

GEOLOGIC CROSS-SECTION A-A'

013932-151
Feb 1, 2018

FIGURE 2.3

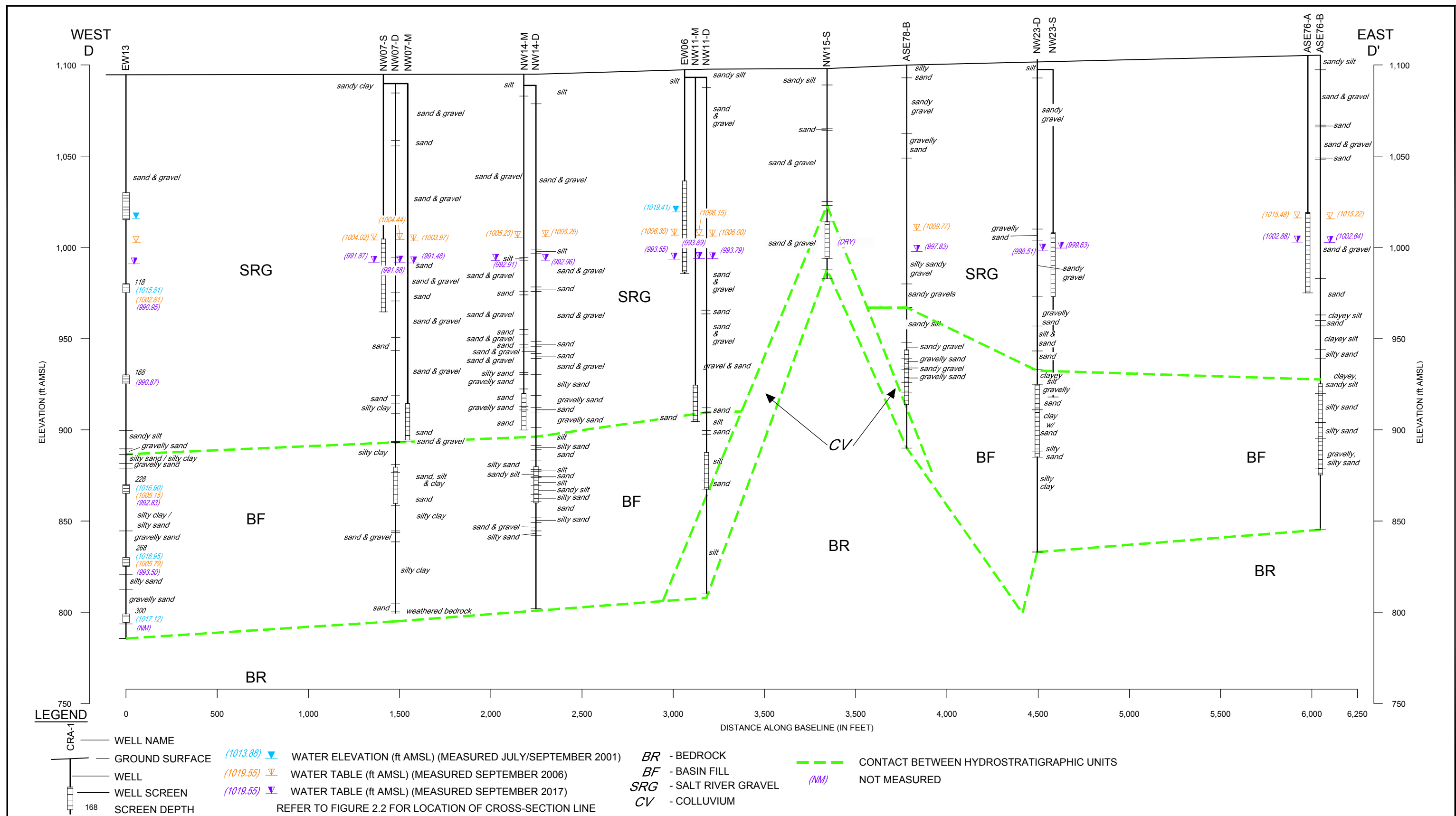


OPERABLE UNIT 2 AREA
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EFFECTIVENESS REPORT - 2017

GEOLOGIC CROSS-SECTION B-B'

013932-151
Aug 3, 2018

FIGURE 2.4



OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

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FIGURE 2.6

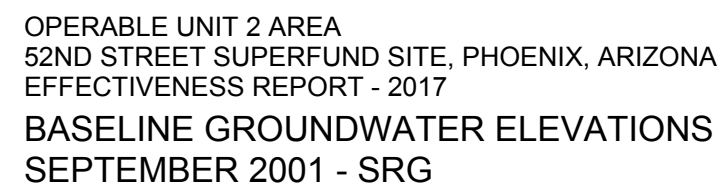
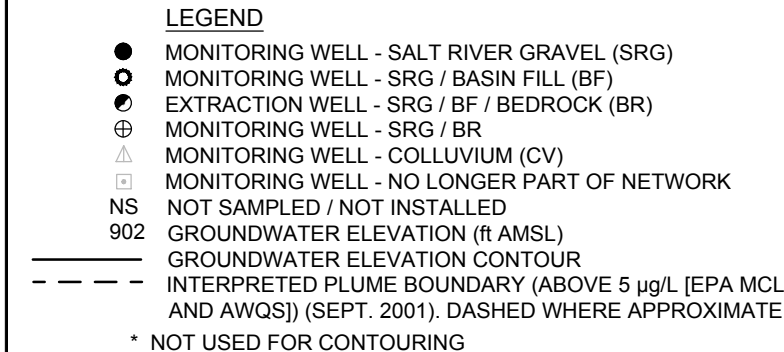
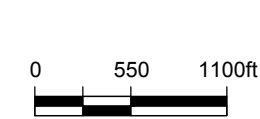
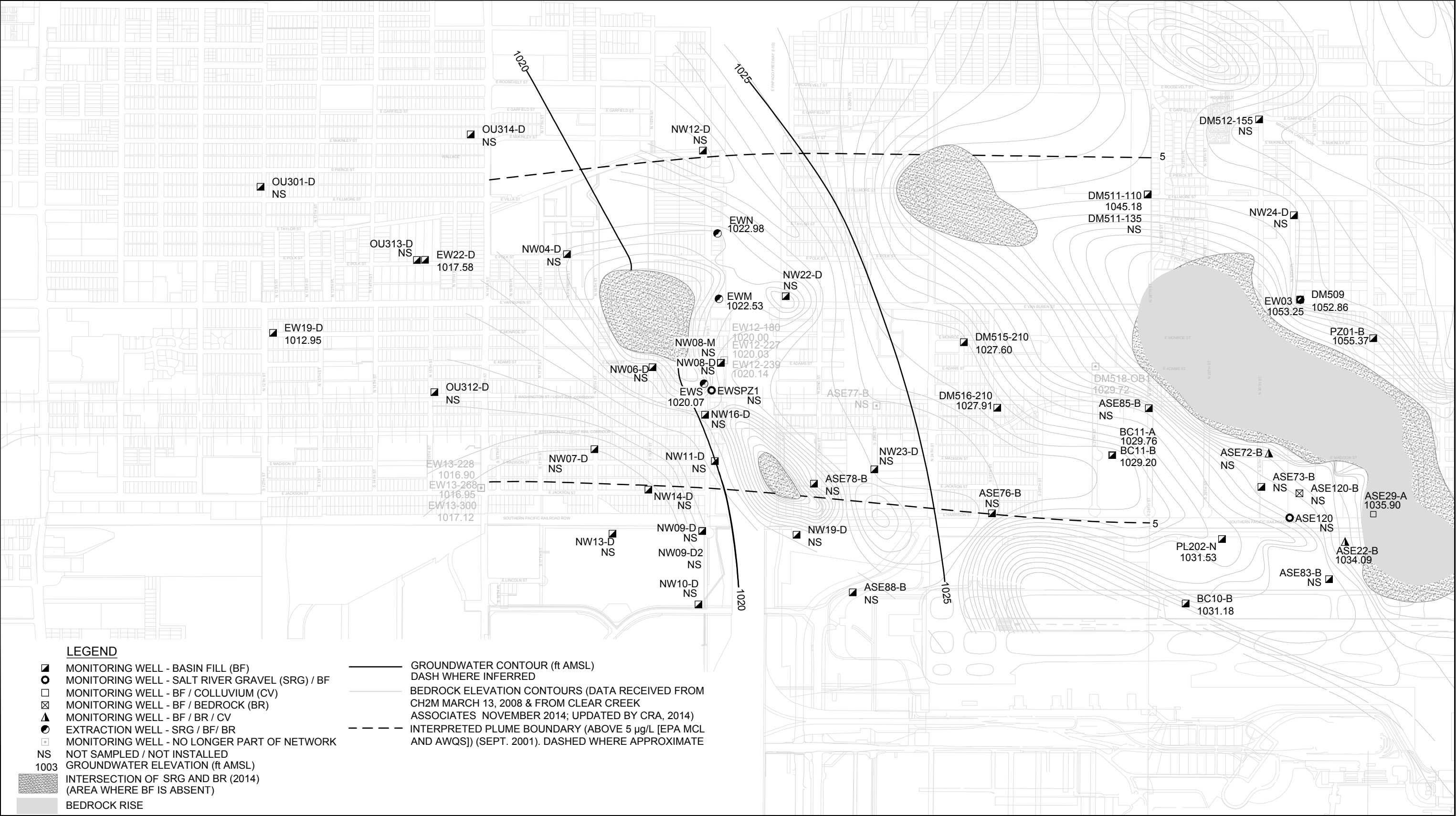
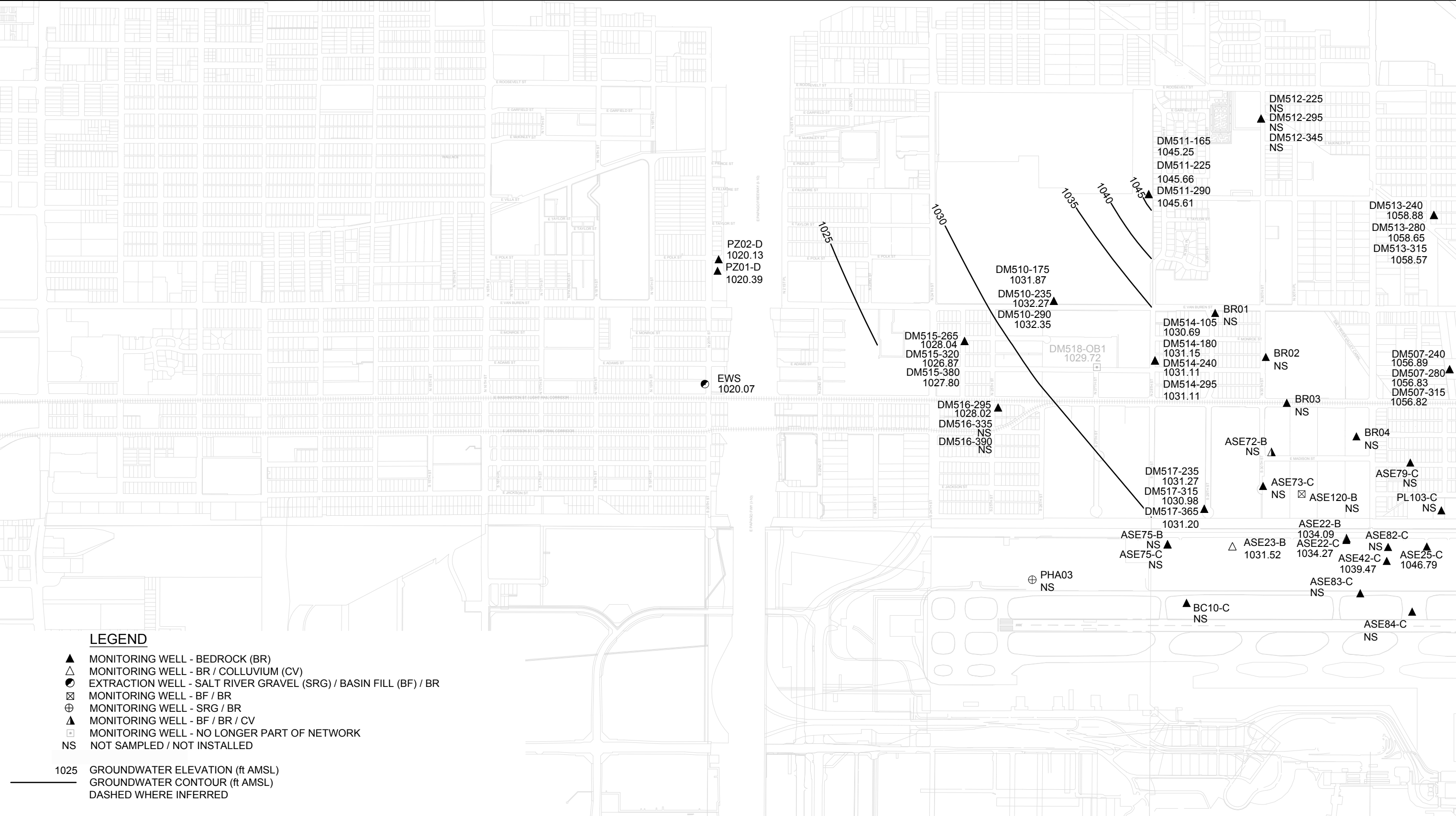
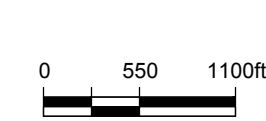
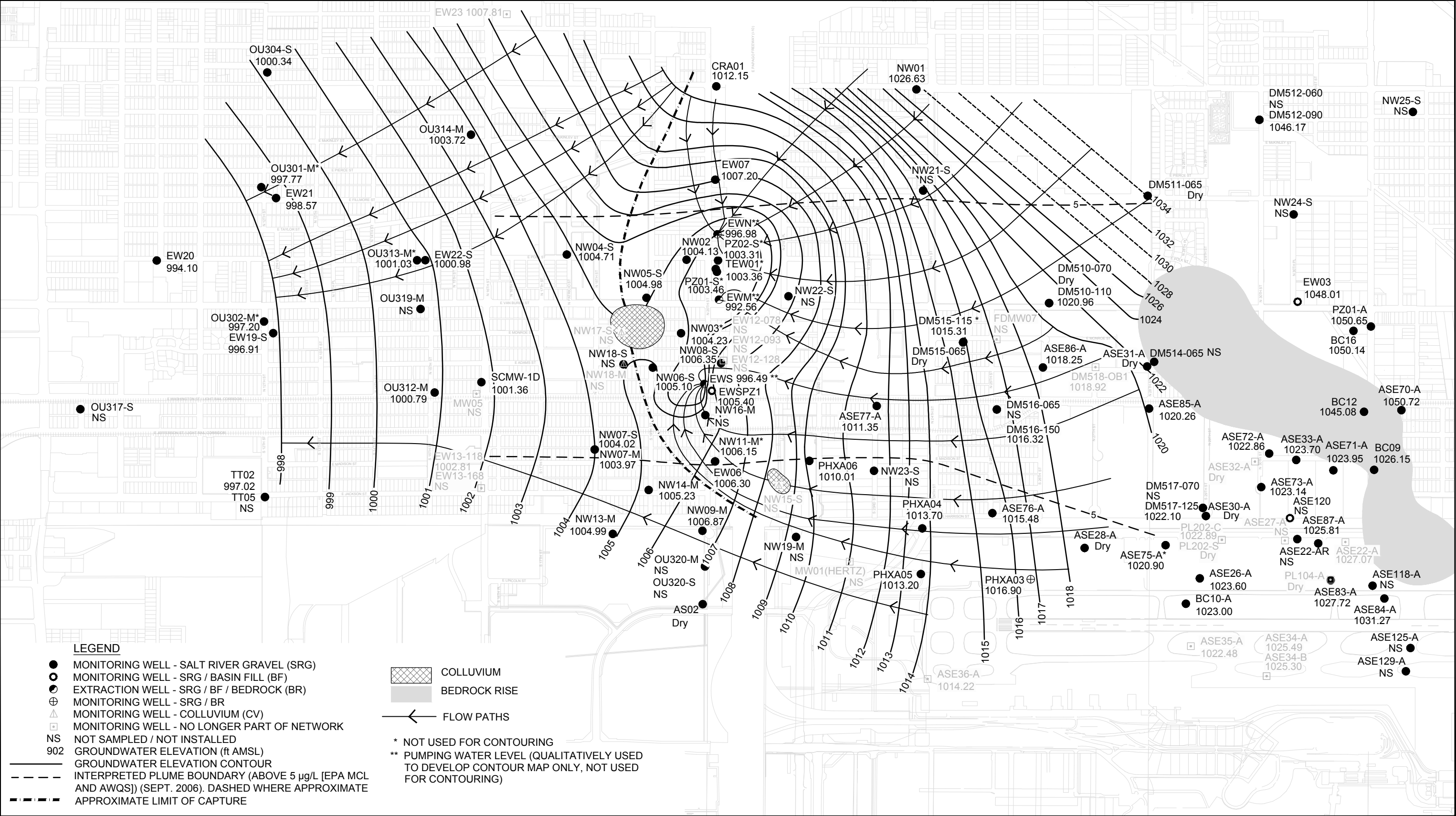


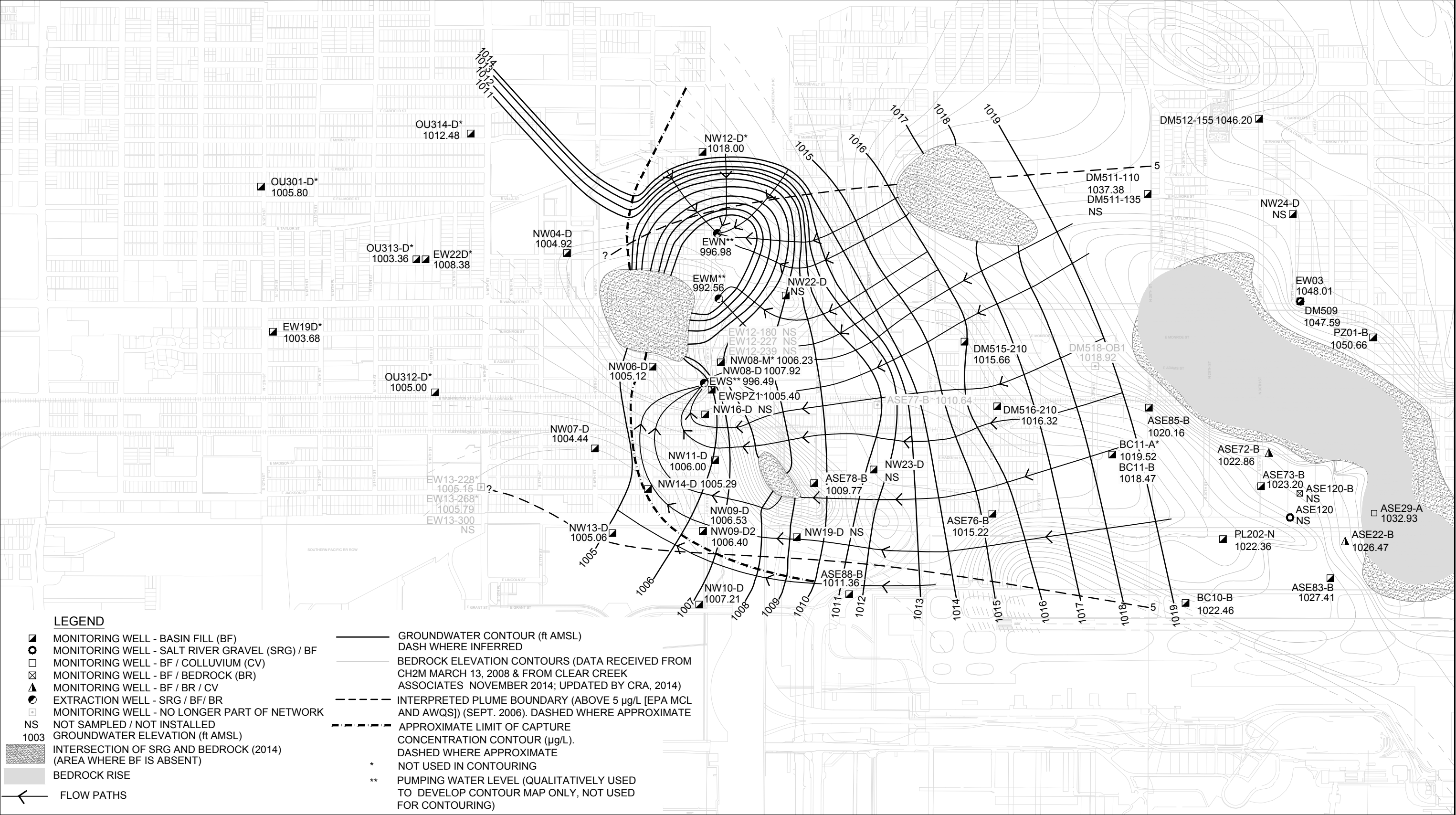
FIGURE 3.1







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Sep 19, 2018



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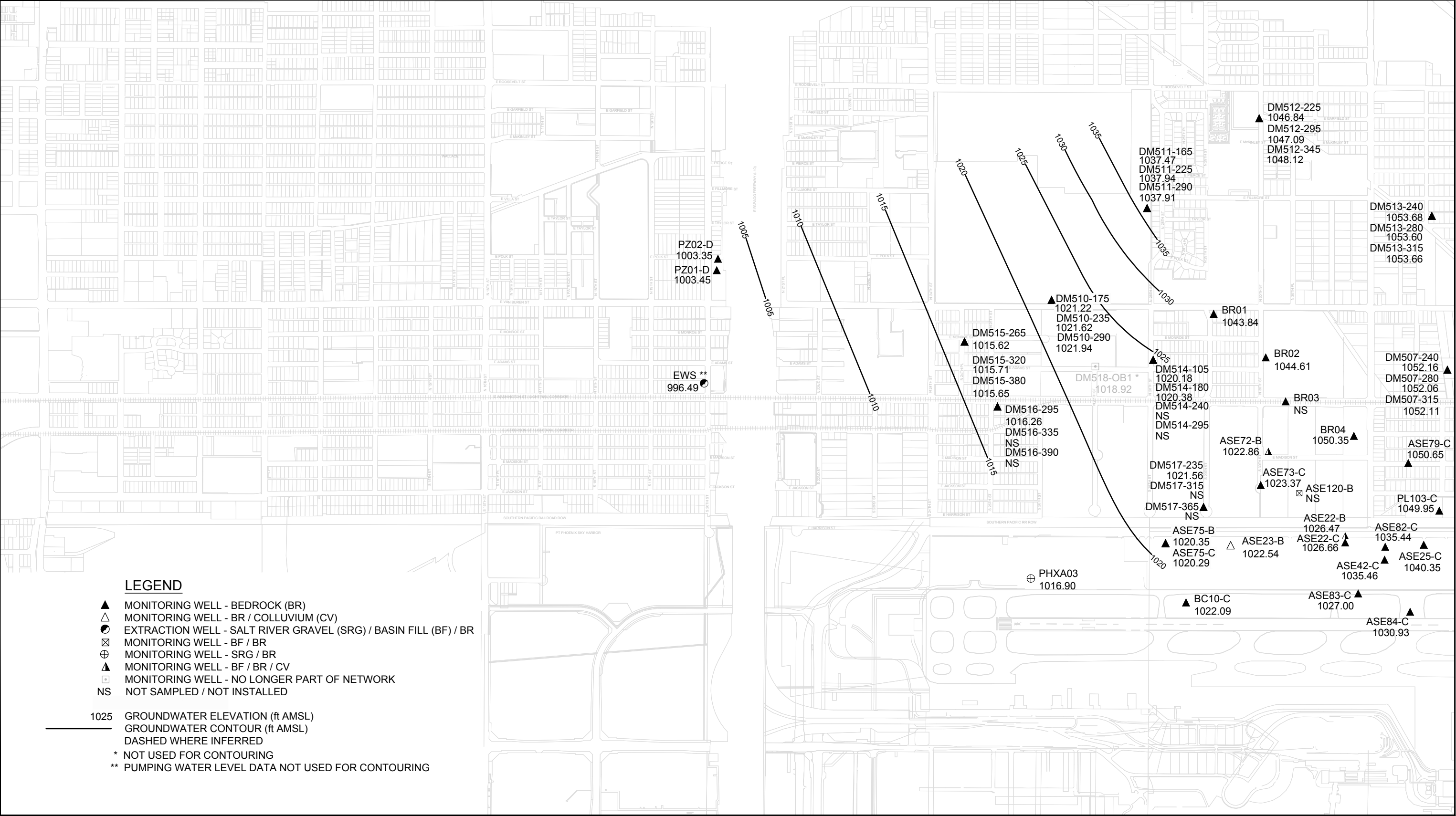
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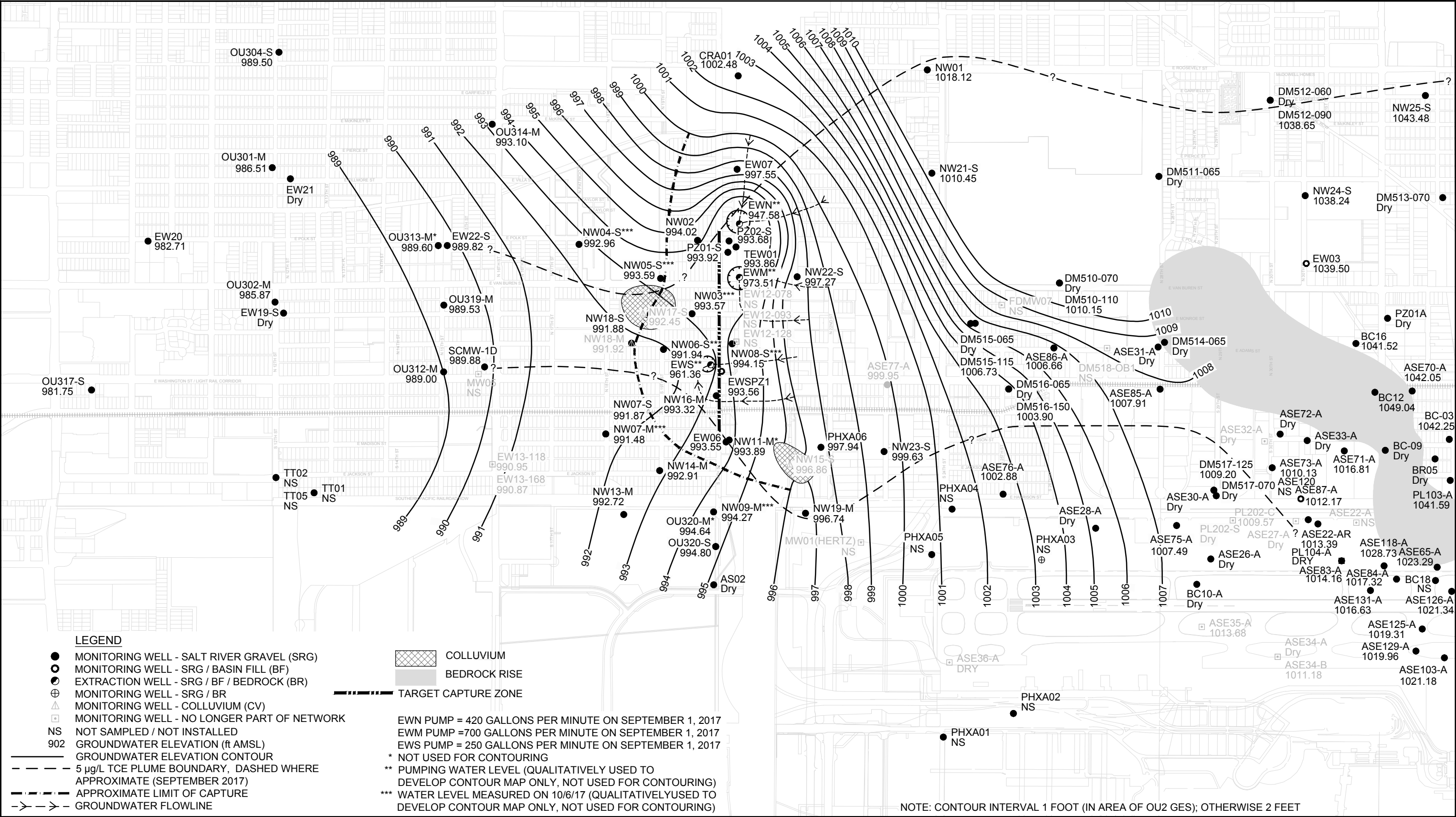
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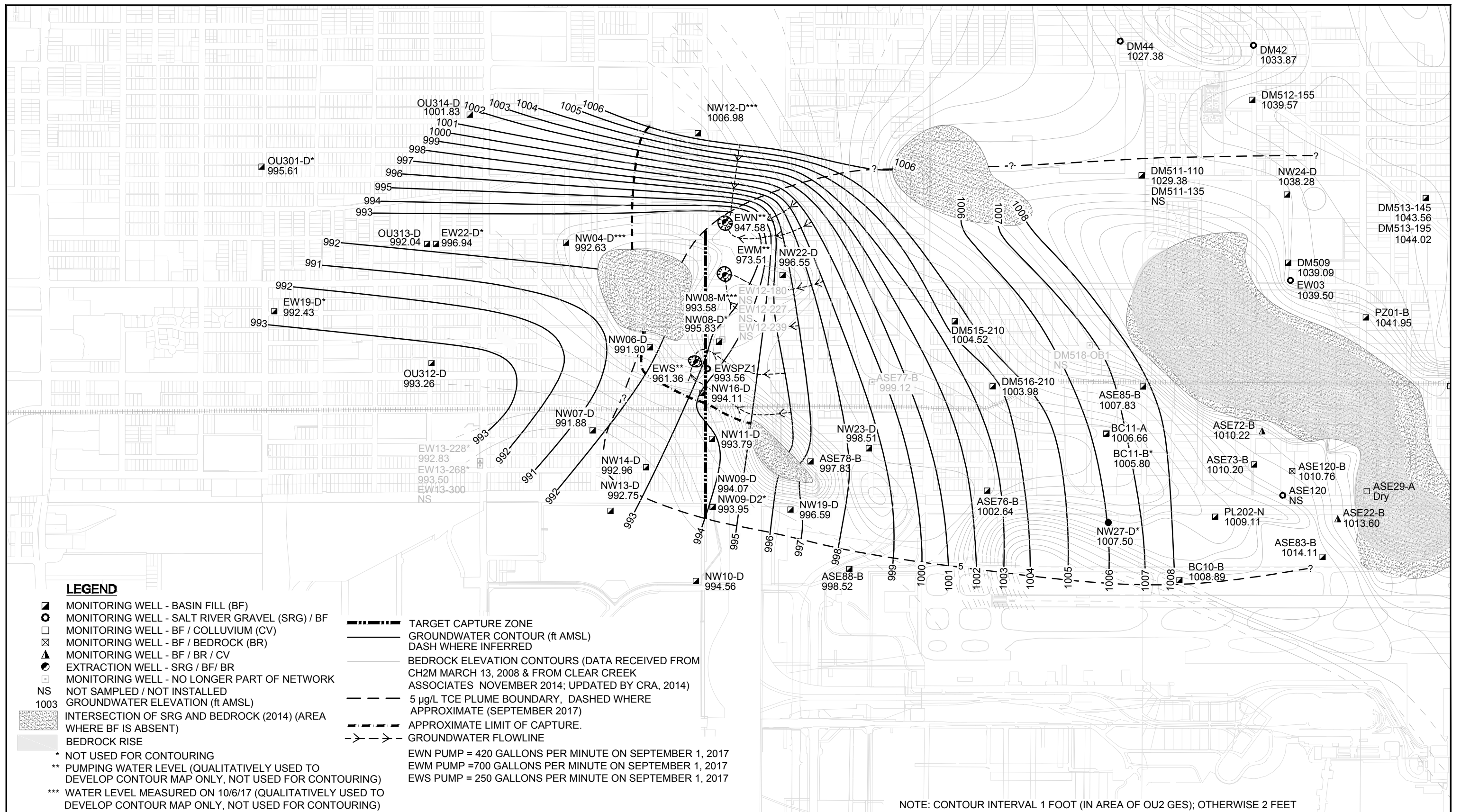
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GROUNDWATER ELEVATIONS - SEPTEMBER 2006 - BF

FIGURE 3.5







0 550Ft 1100Ft



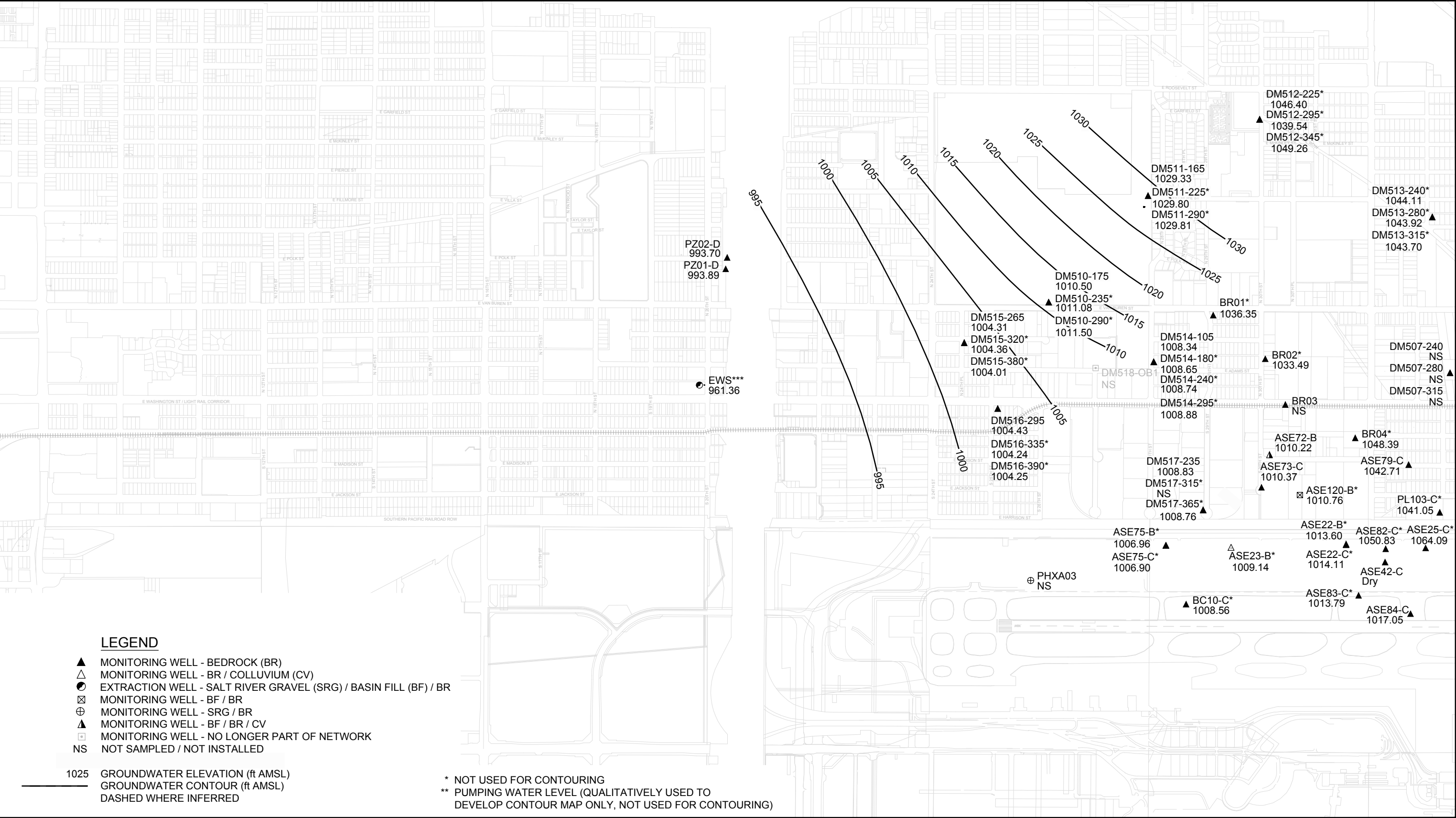
OPERABLE UNIT 2 AREA
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EFFECTIVENESS REPORT - 2017

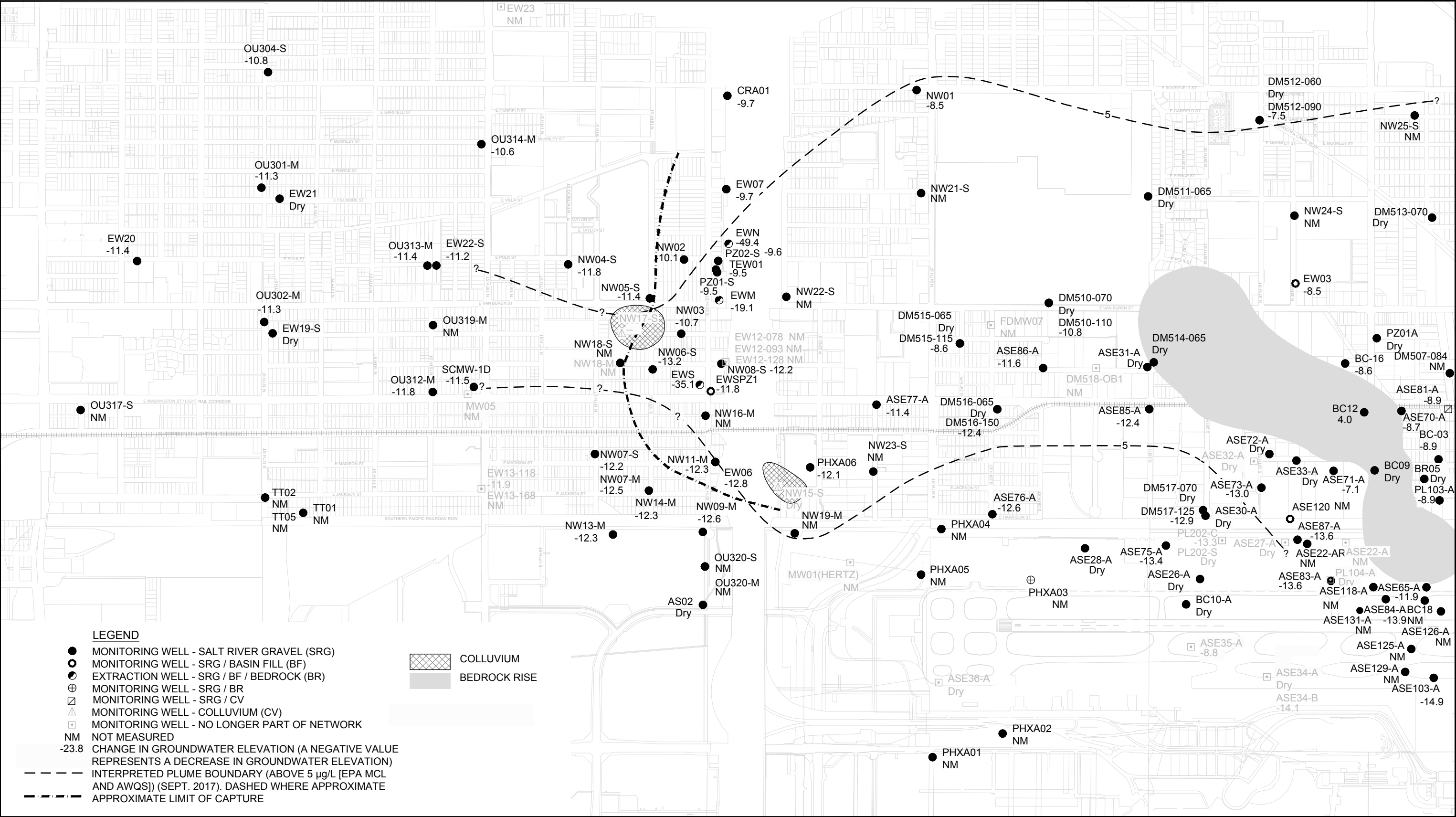
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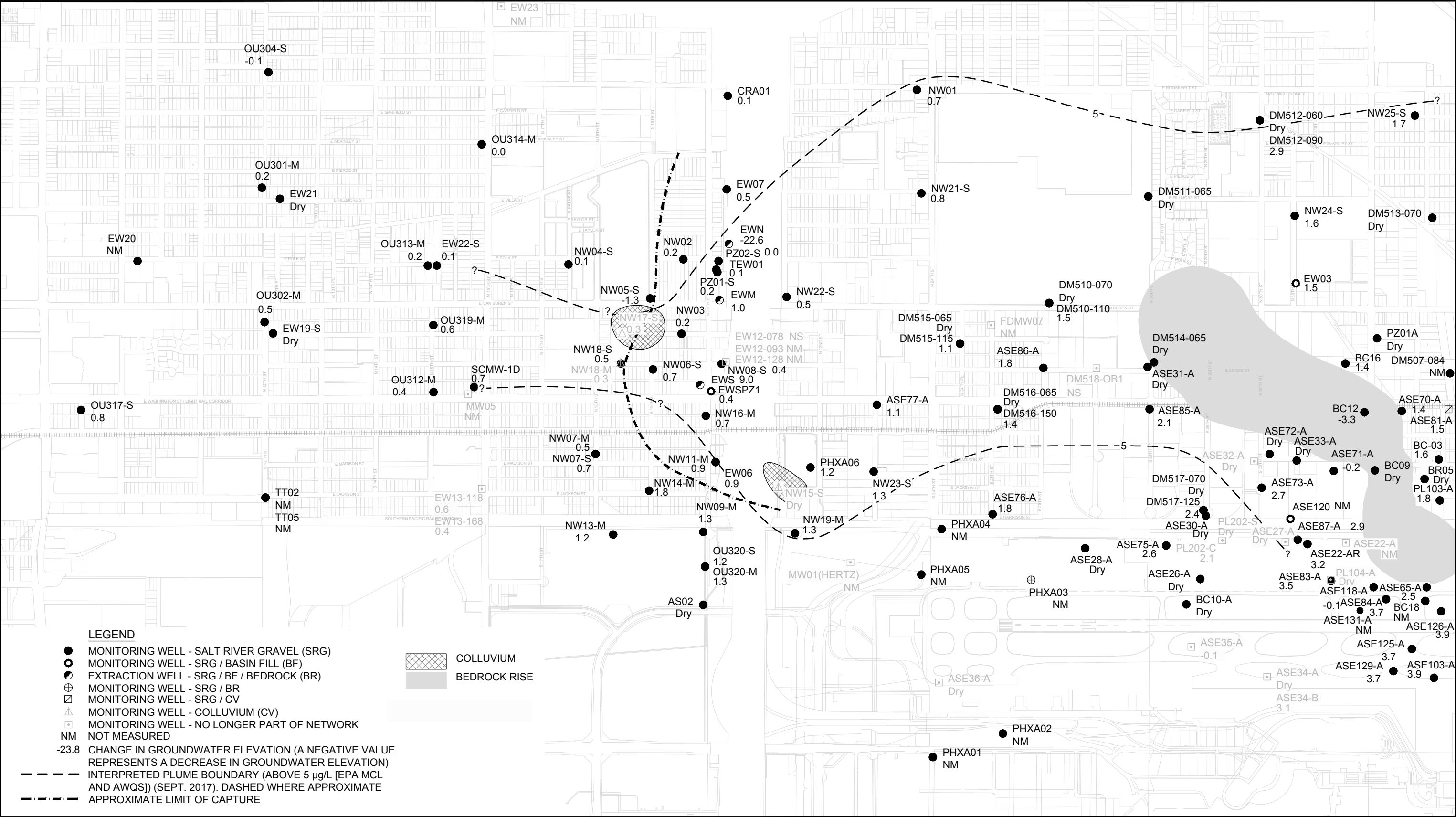
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GROUNDWATER ELEVATIONS - SEPTEMBER 2017 - BF

FIGURE 3.8



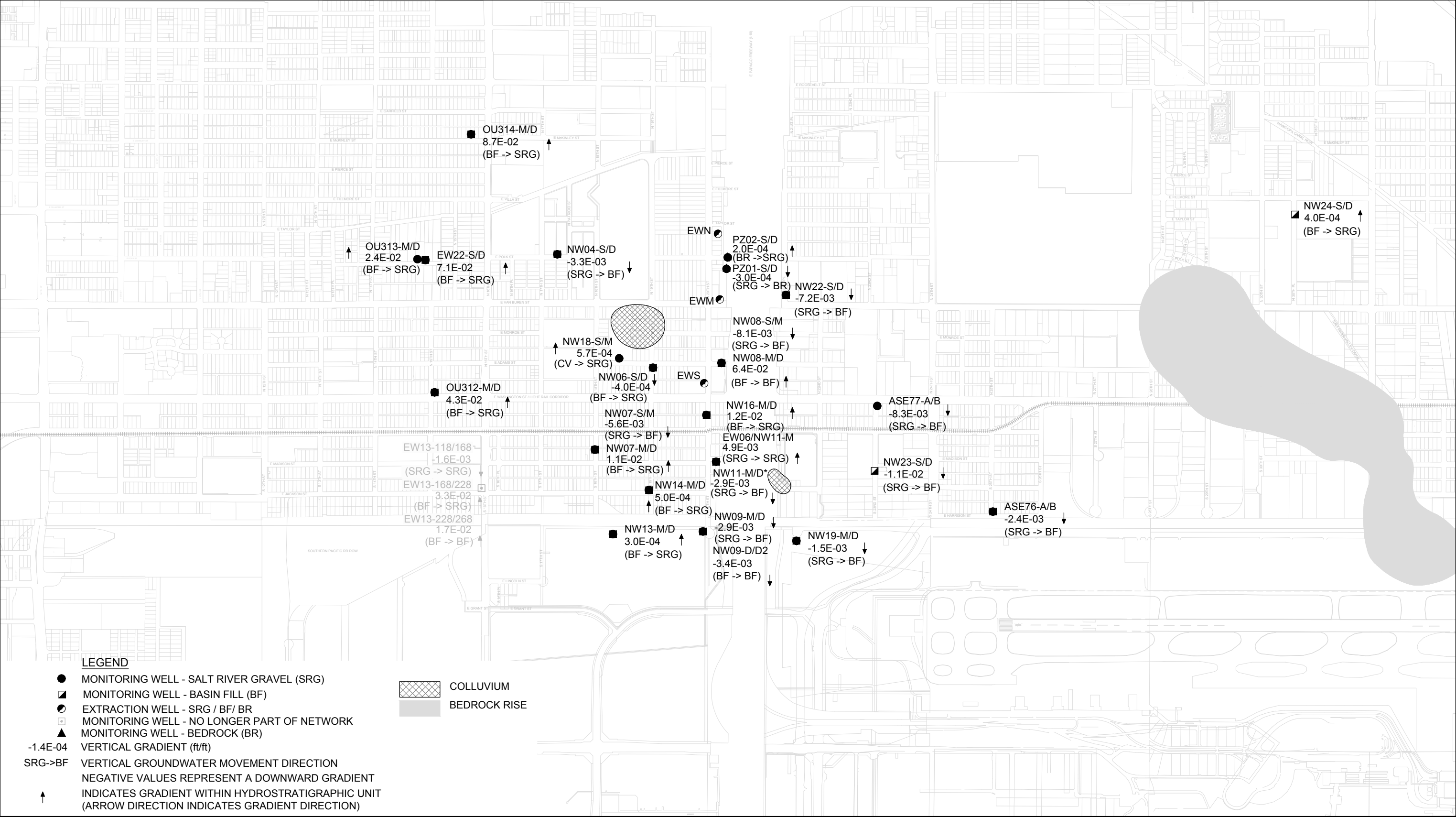


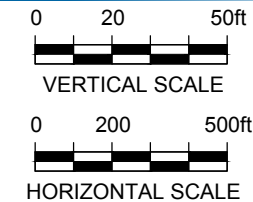
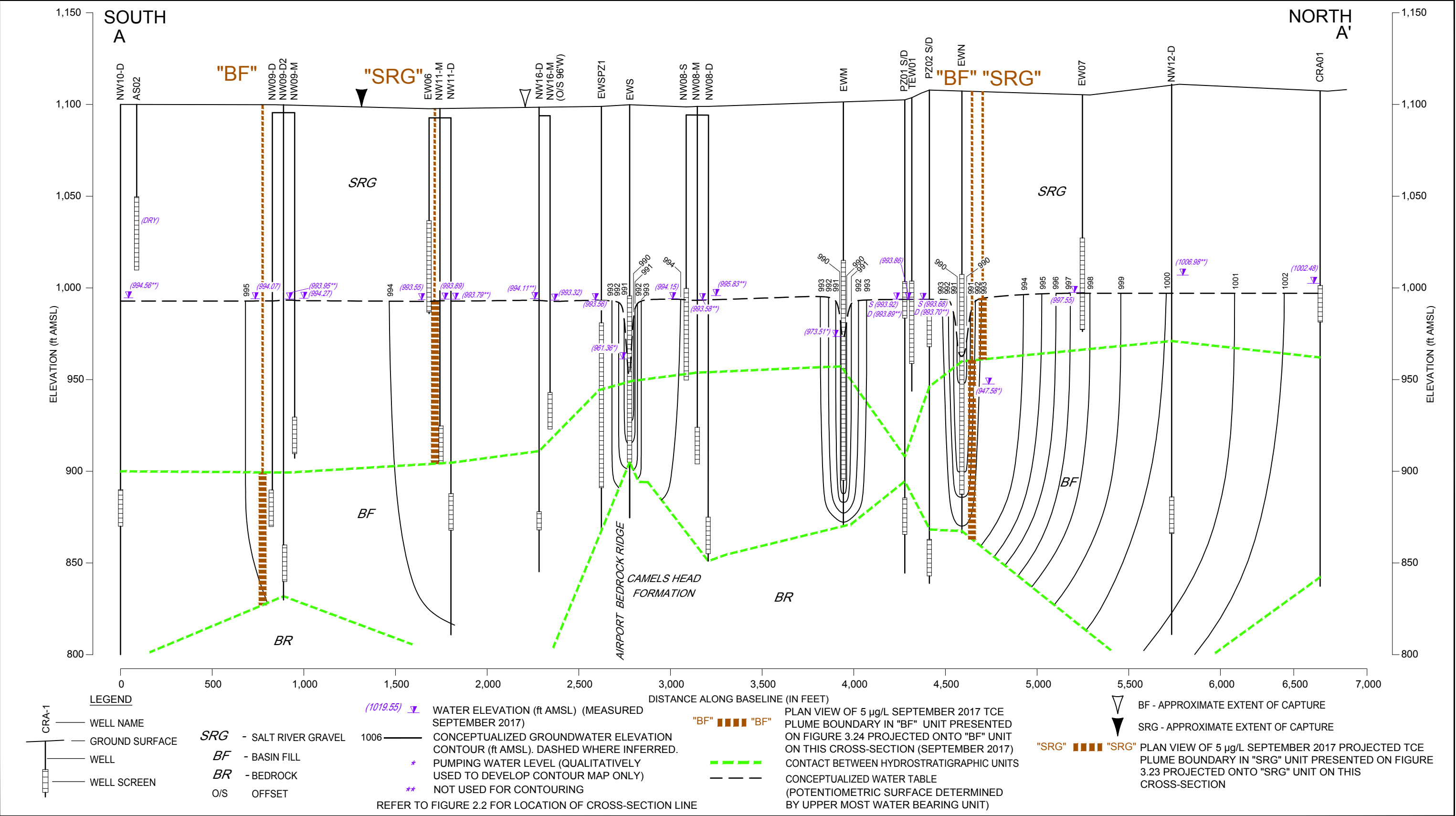


OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017
CHANGE IN GROUNDWATER ELEVATIONS
SEPT. 2016 TO SEPT. 2017 - SRG

013932-151
Sep 19, 2018

FIGURE 3.12



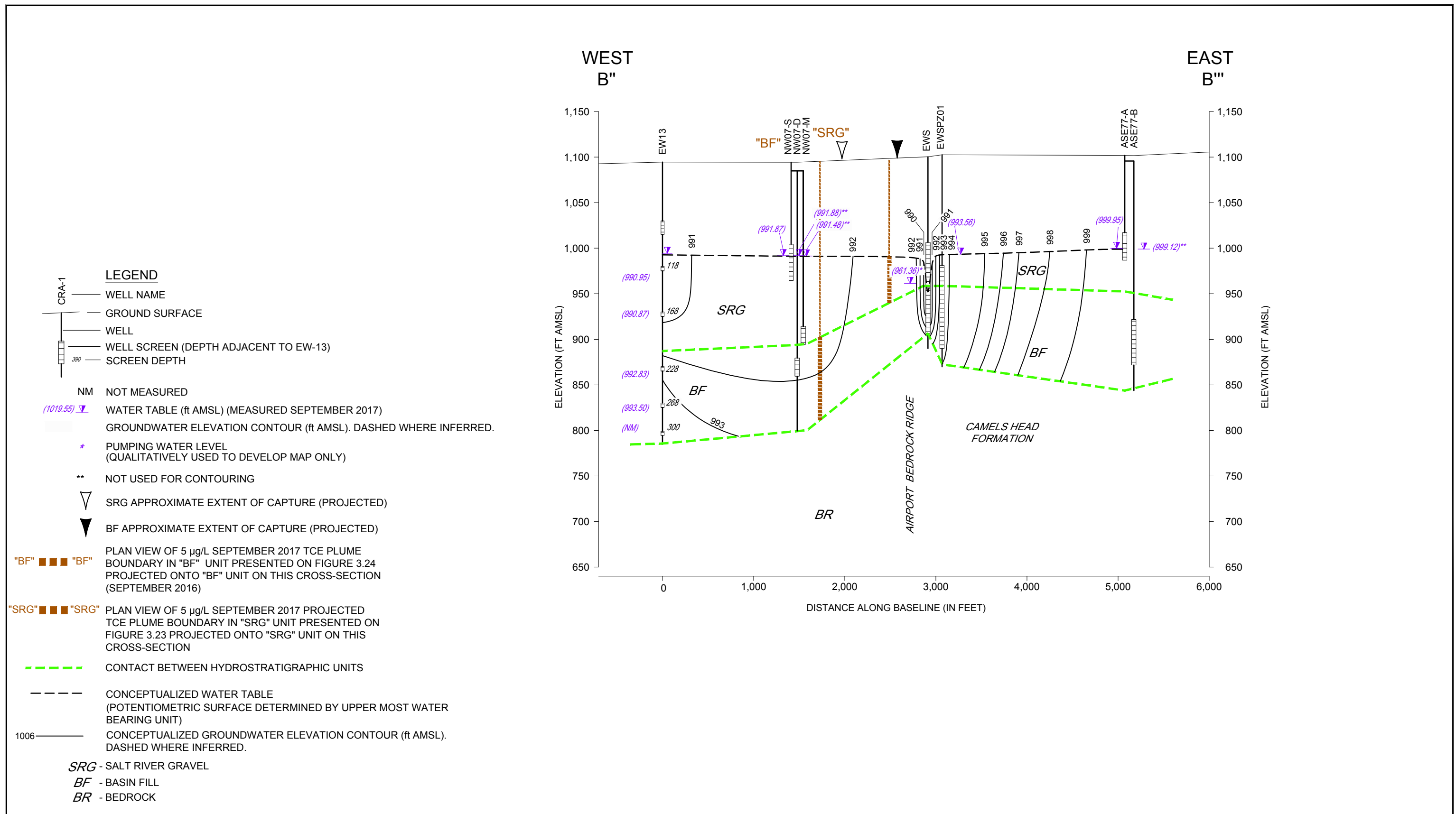


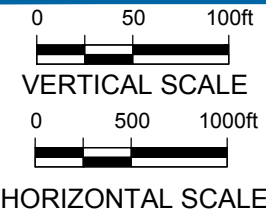
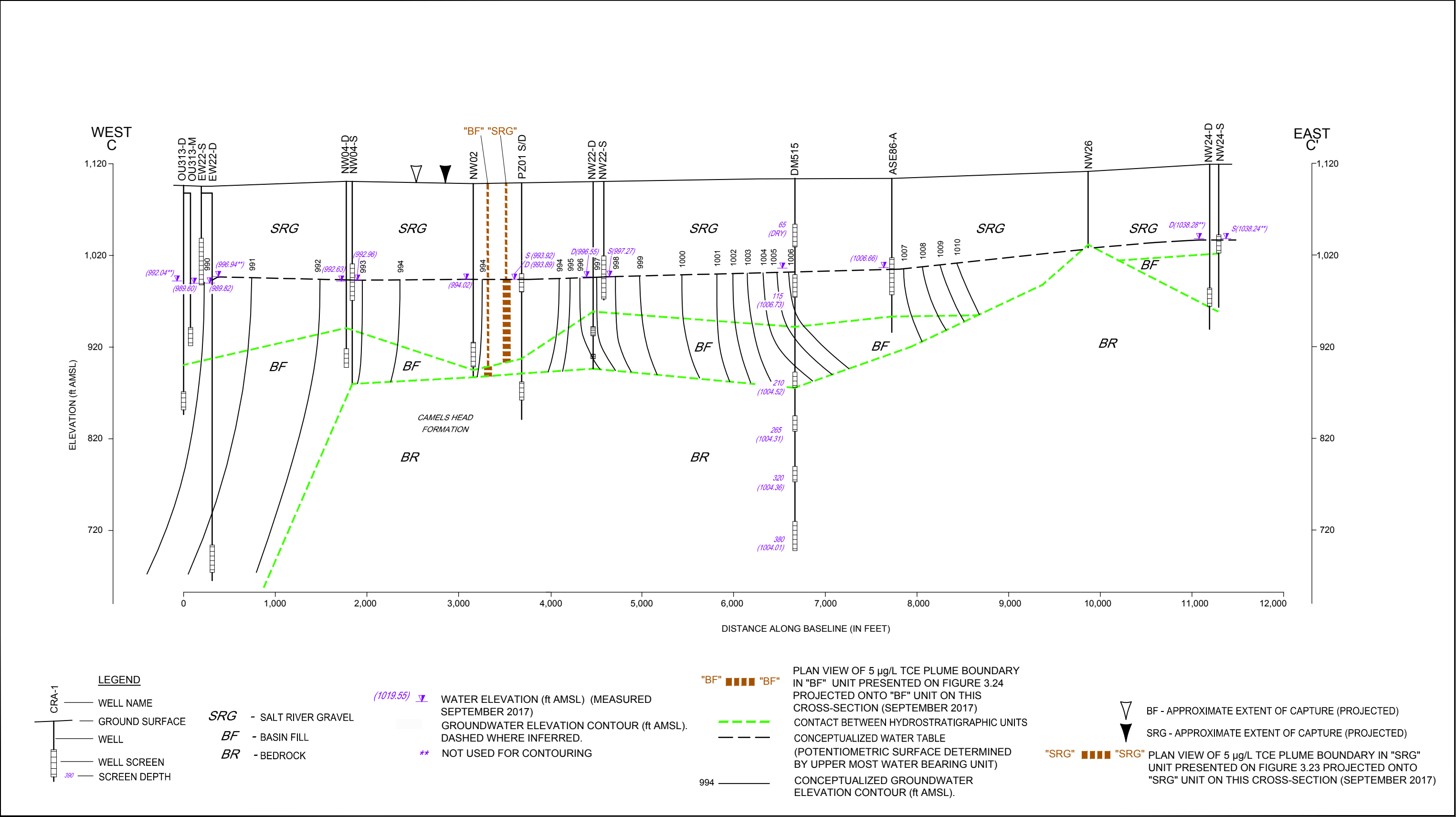
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

CONCEPTUALIZED GROUNDWATER CONTOURS A-A'
SEPTEMBER 2017

013932-151
Oct 25, 2018

FIGURE 3.14

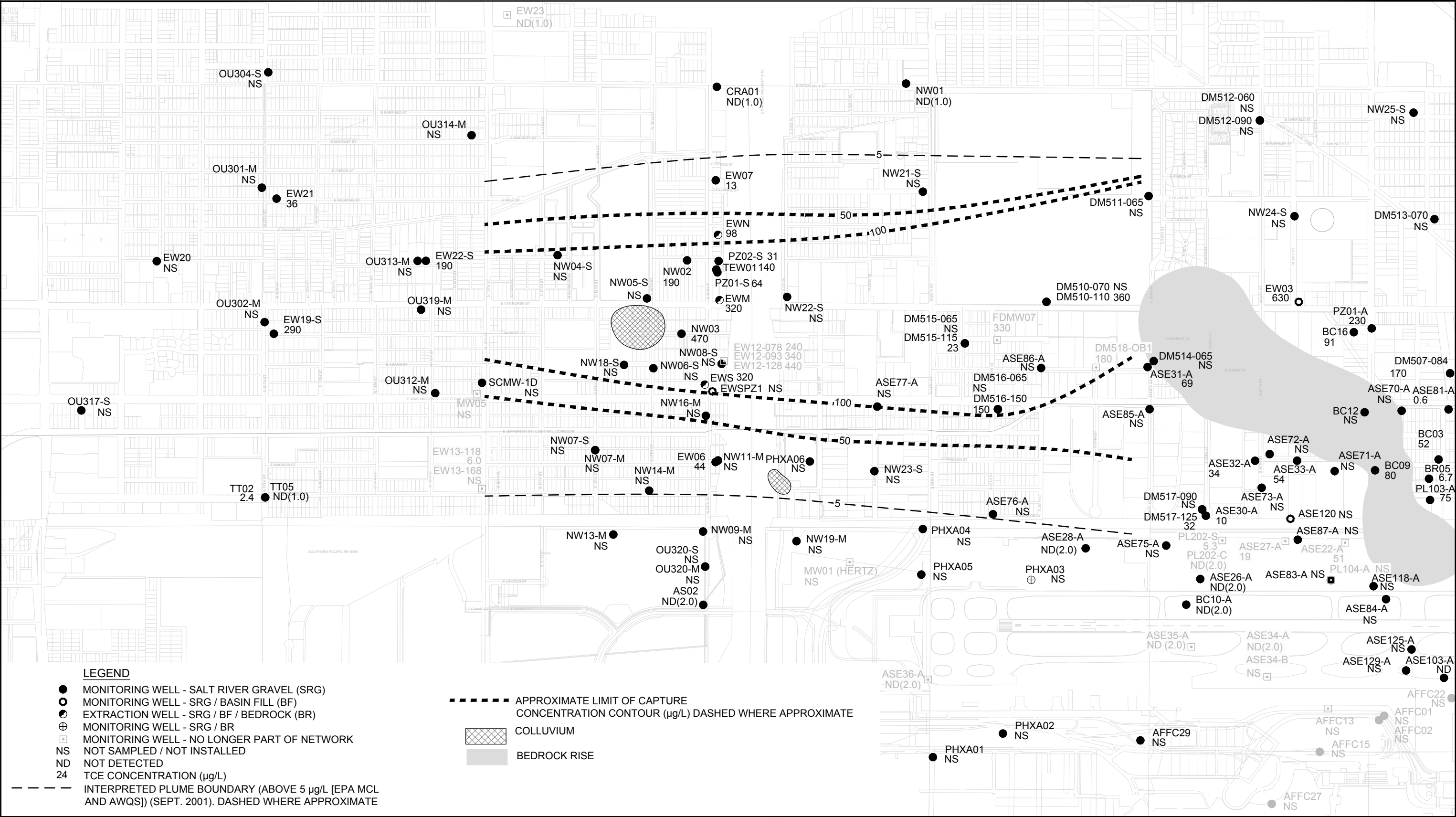


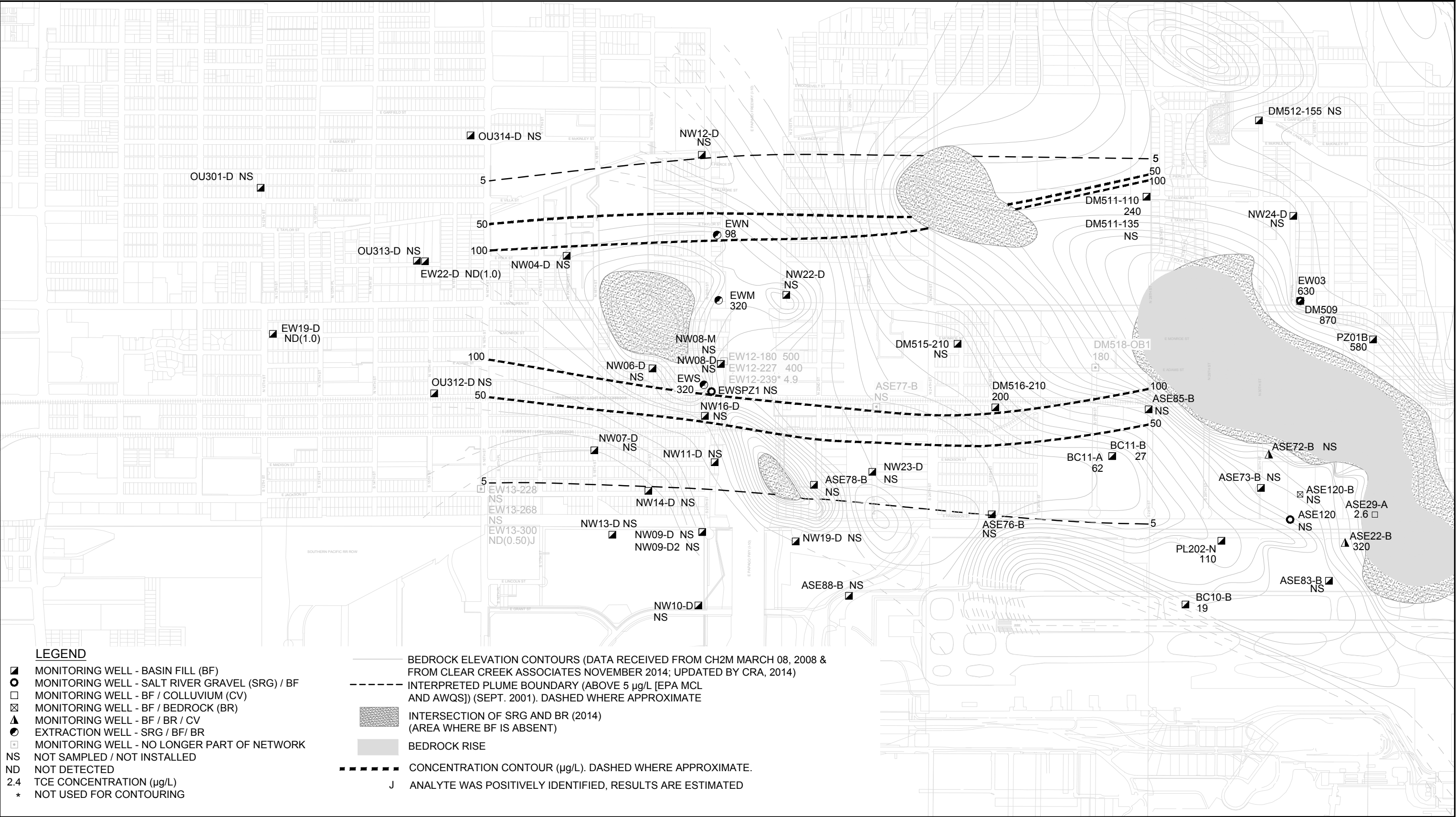


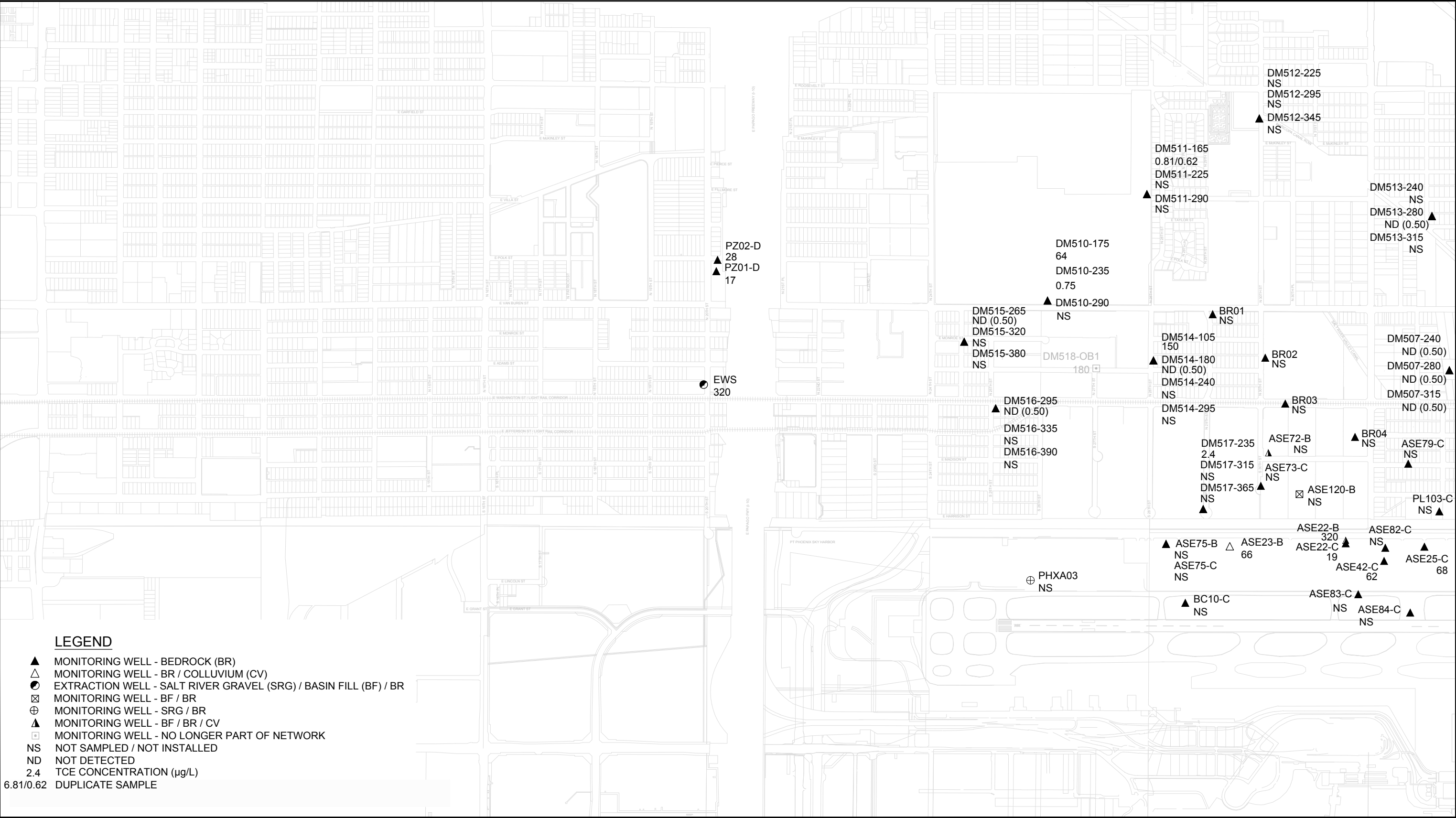
OPERABLE UNIT 2 AREA
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EFFECTIVENESS REPORT - 2017
CONCEPTUALIZED GROUNDWATER CONTOURS
CROSS-SECTION C-C' - SEPTEMBER 2017

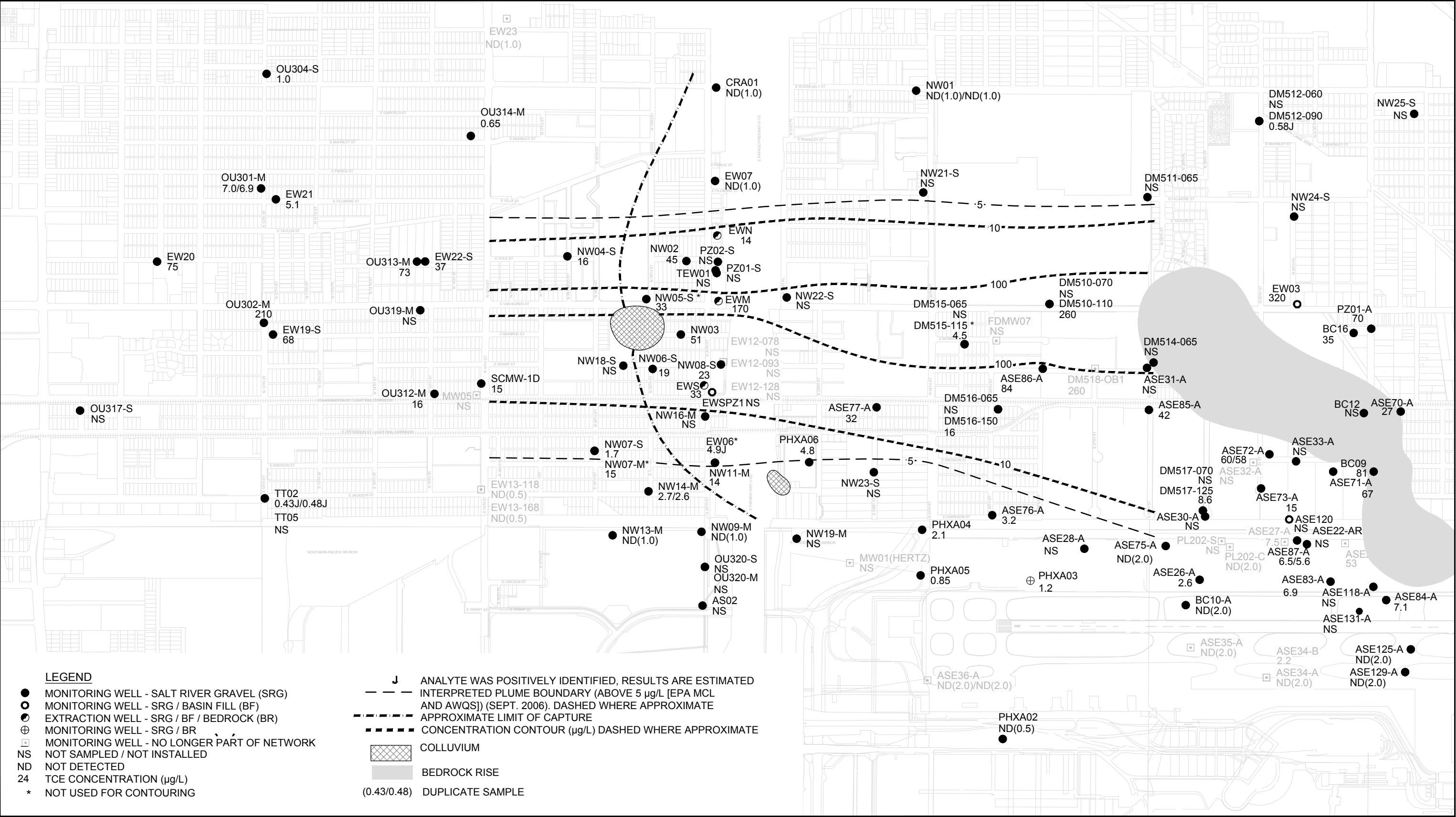
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FIGURE 3.16









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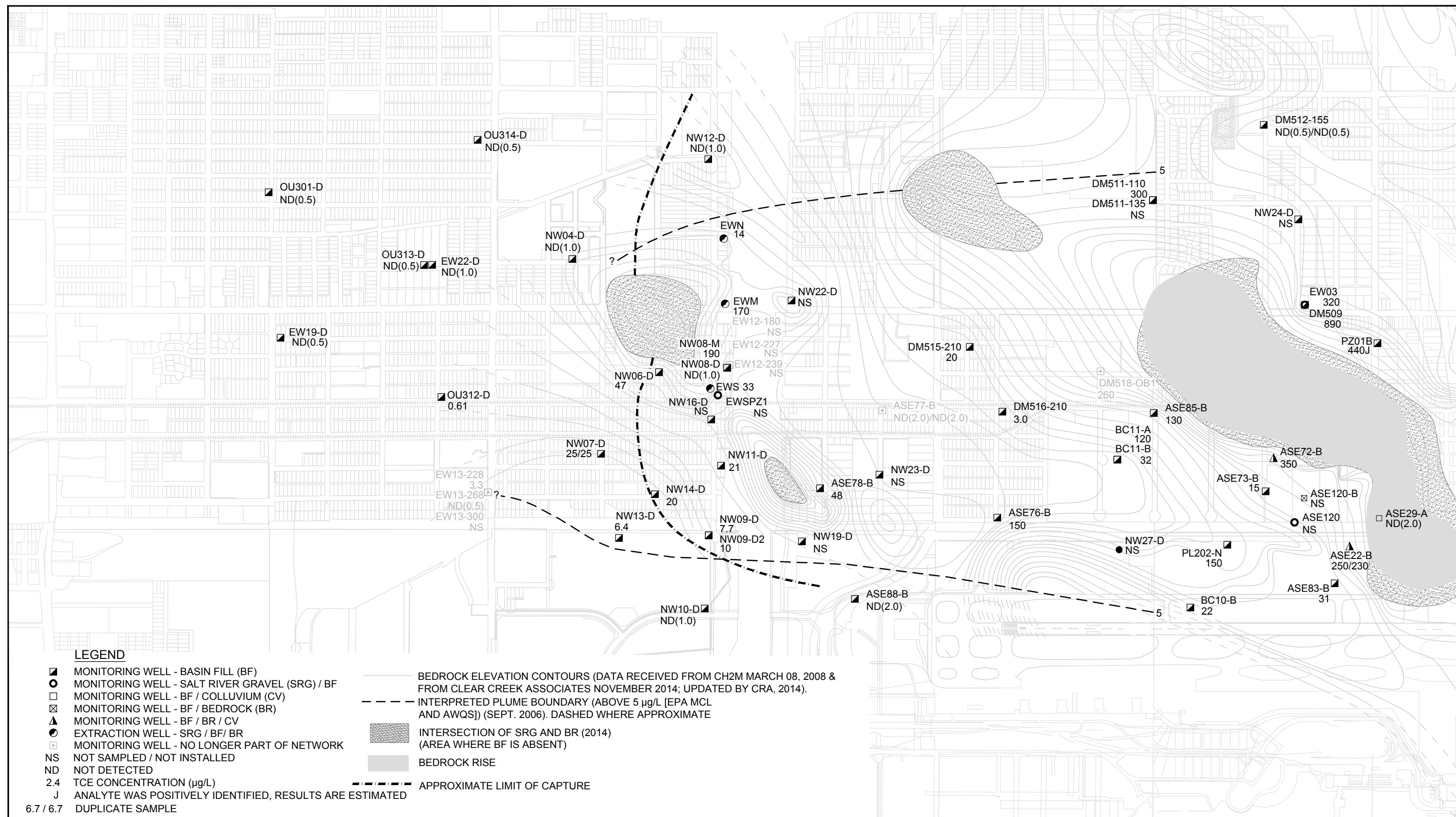
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

TCE CONCENTRATIONS - SEPTEMBER 2006 - SRG

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Sep 19, 2018

FIGURE 3.20



0 550 1100ft

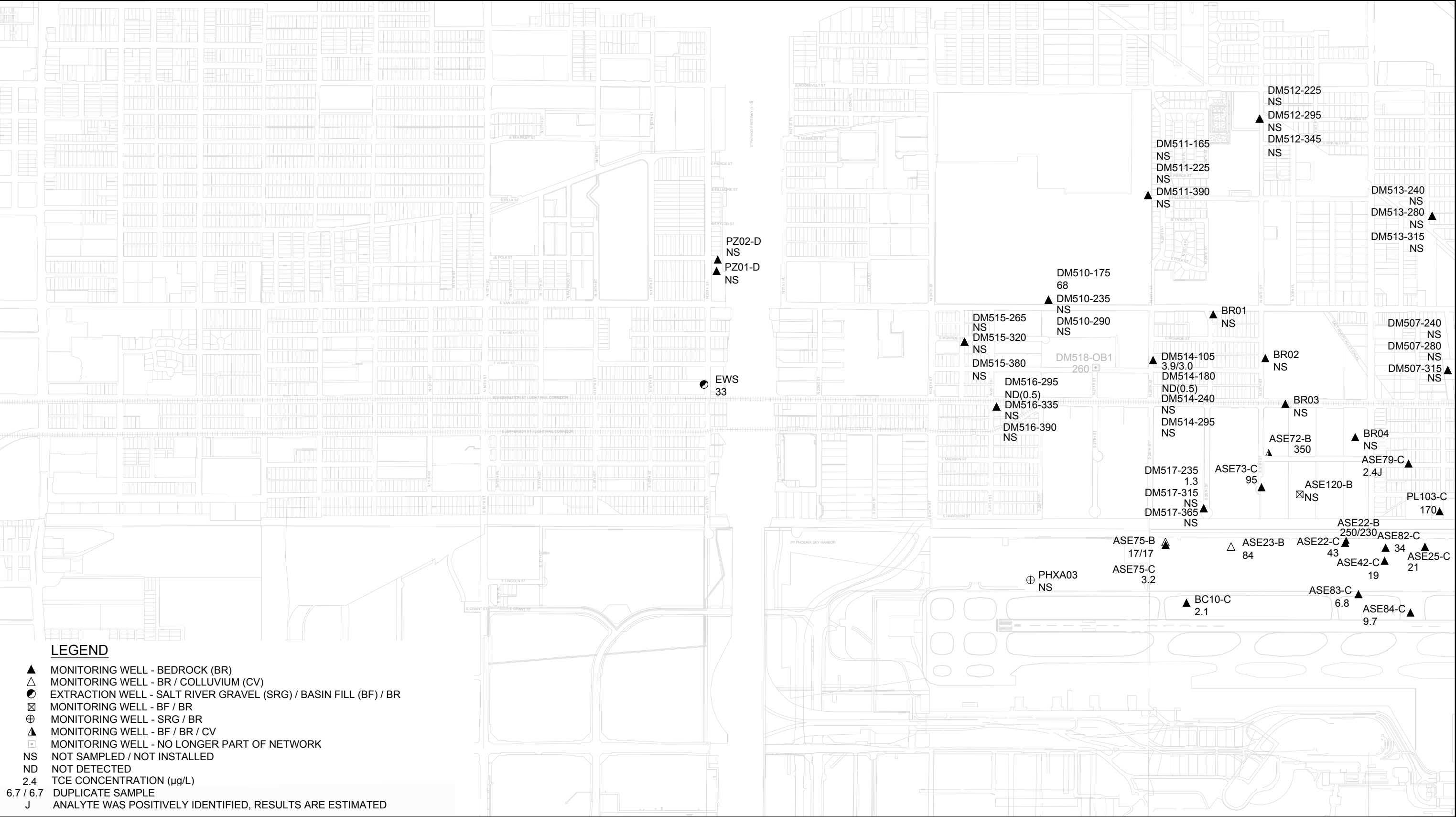


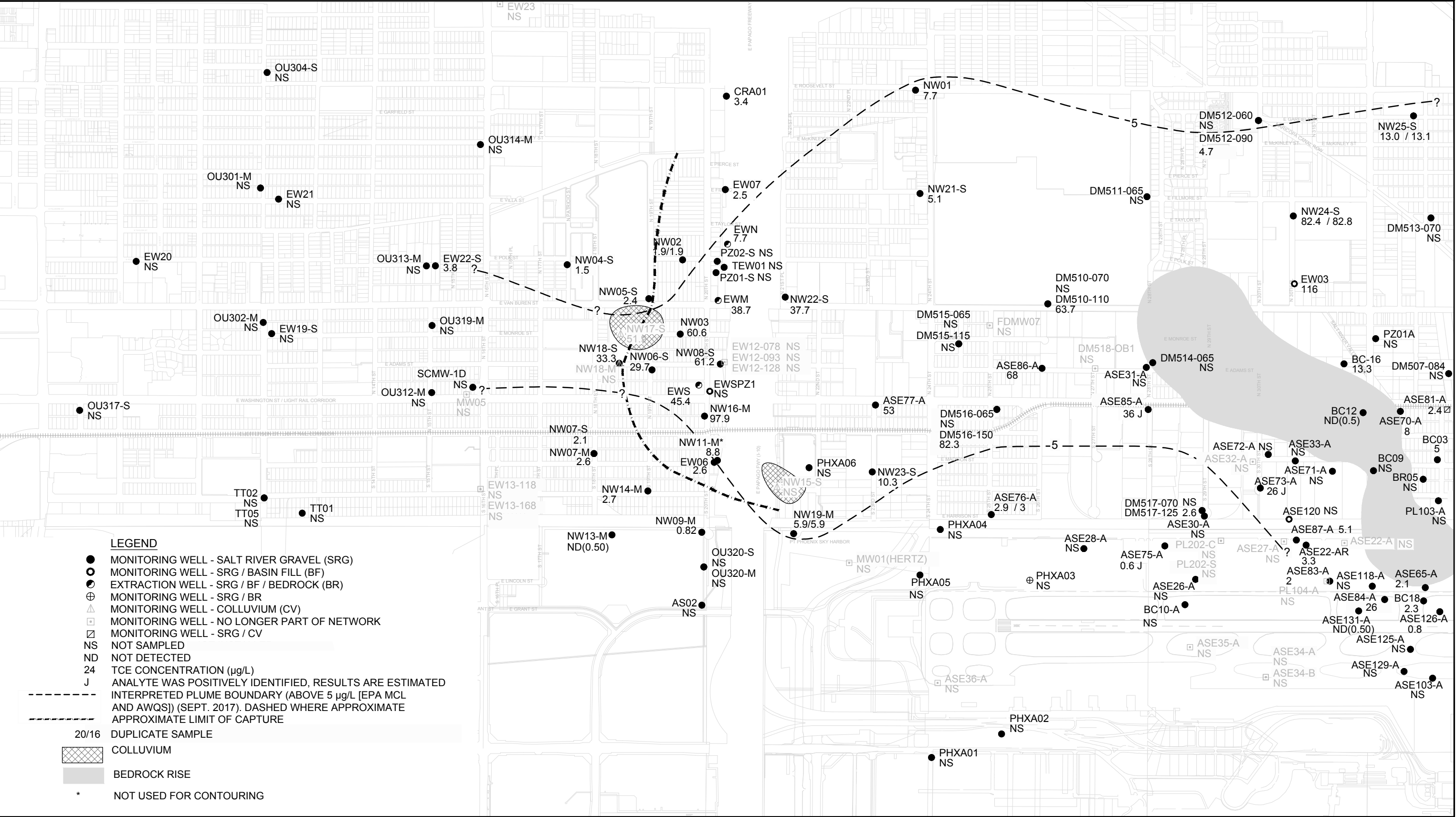
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52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

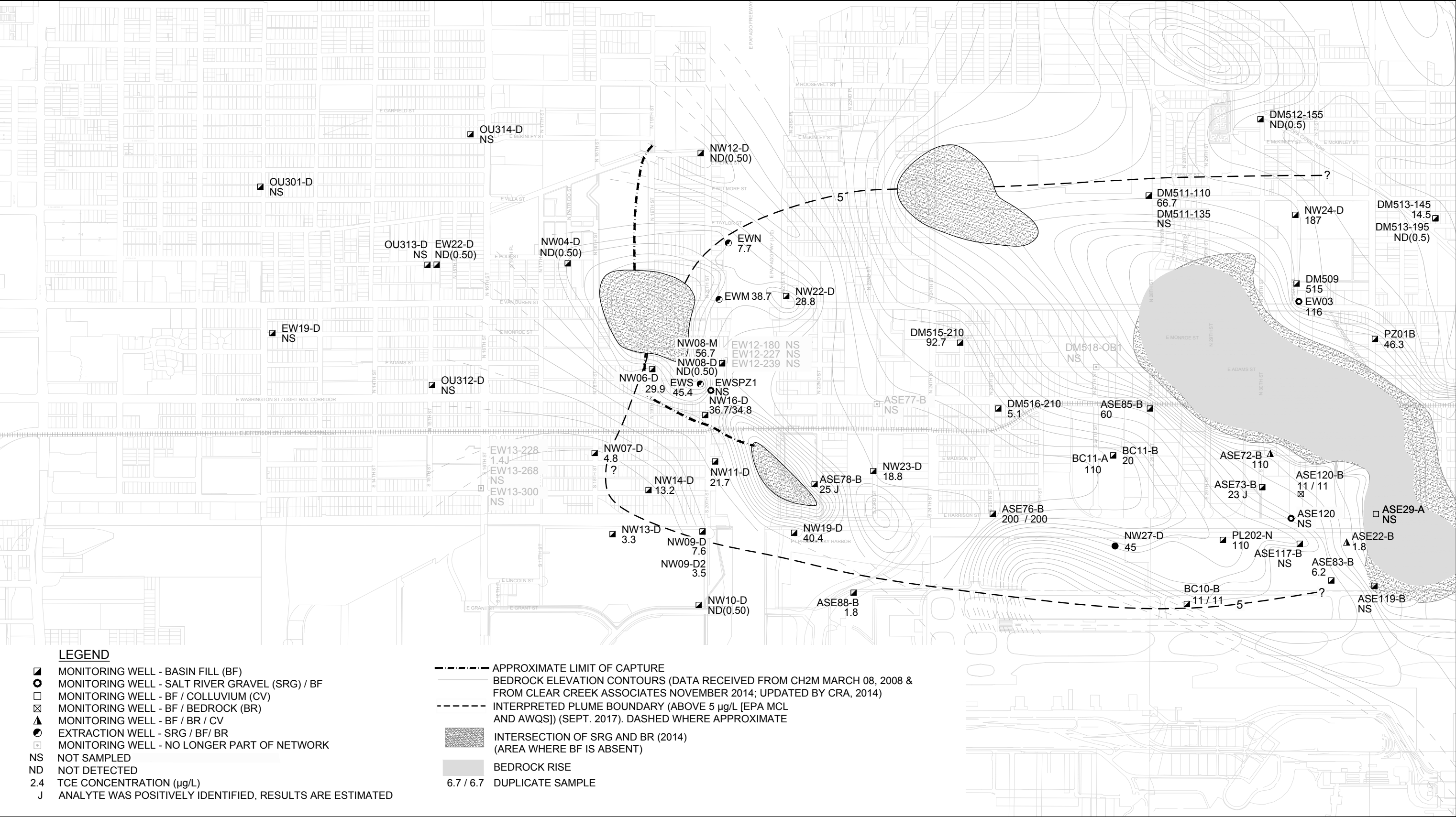
TCE CONCENTRATIONS - SEPTEMBER 2006 - BF

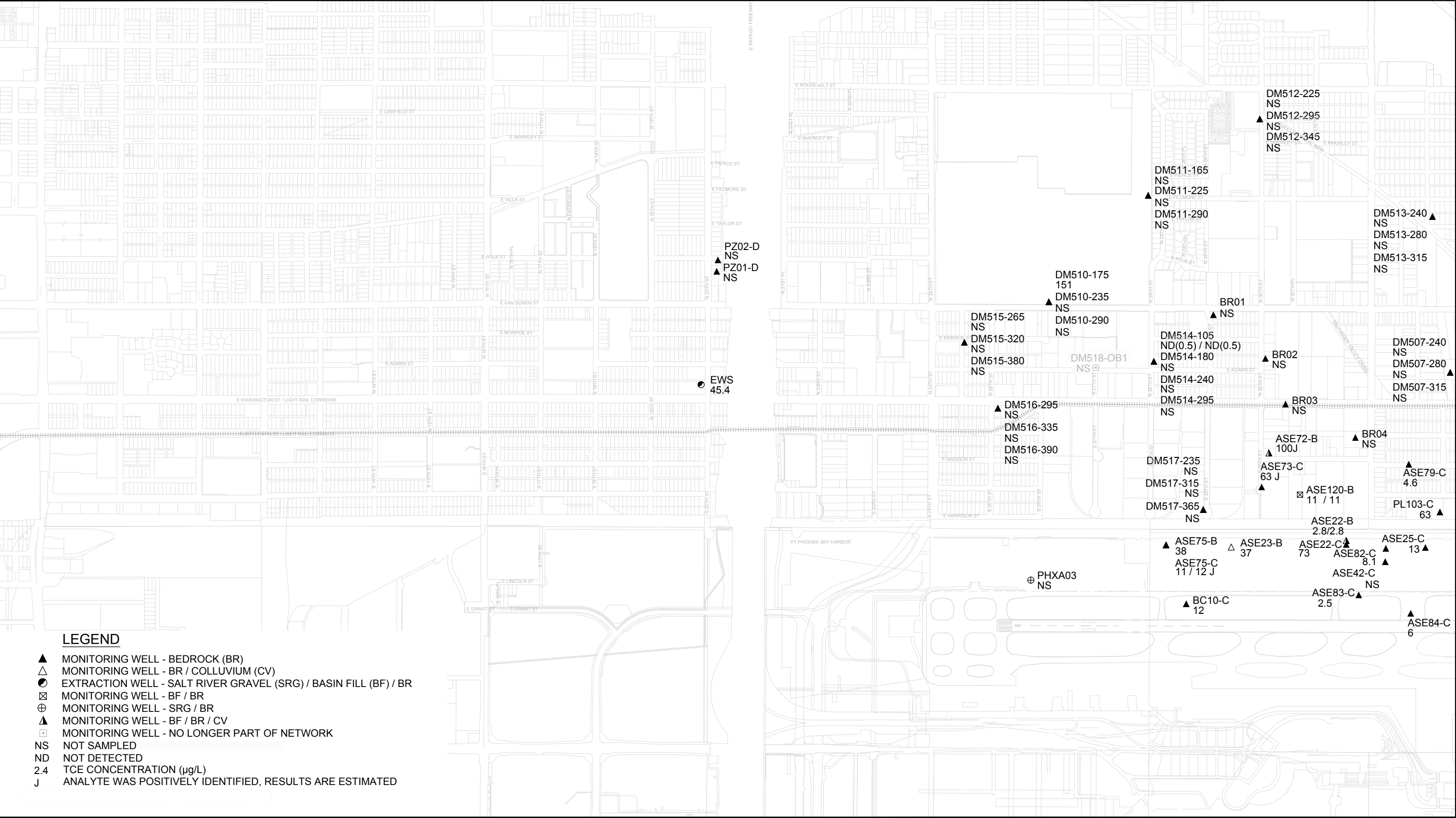
013932-151
Sep 19, 2018

FIGURE 3.21









0 550 1100ft



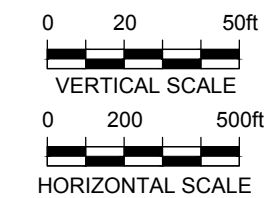
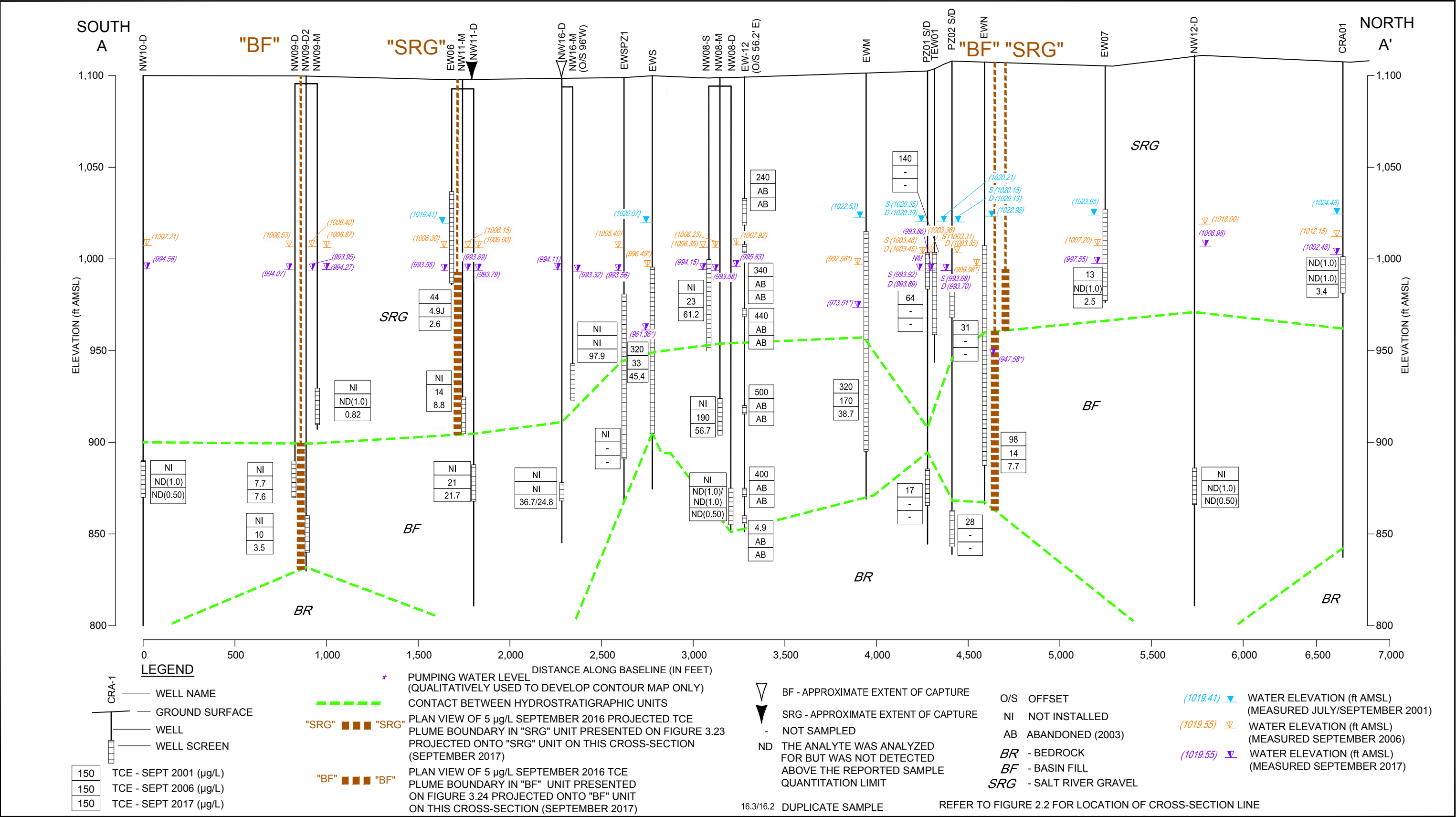
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

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TCE CONCENTRATIONS - SEPTEMBER 2017 - BR

FIGURE 3.25

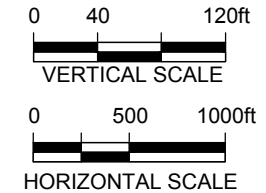
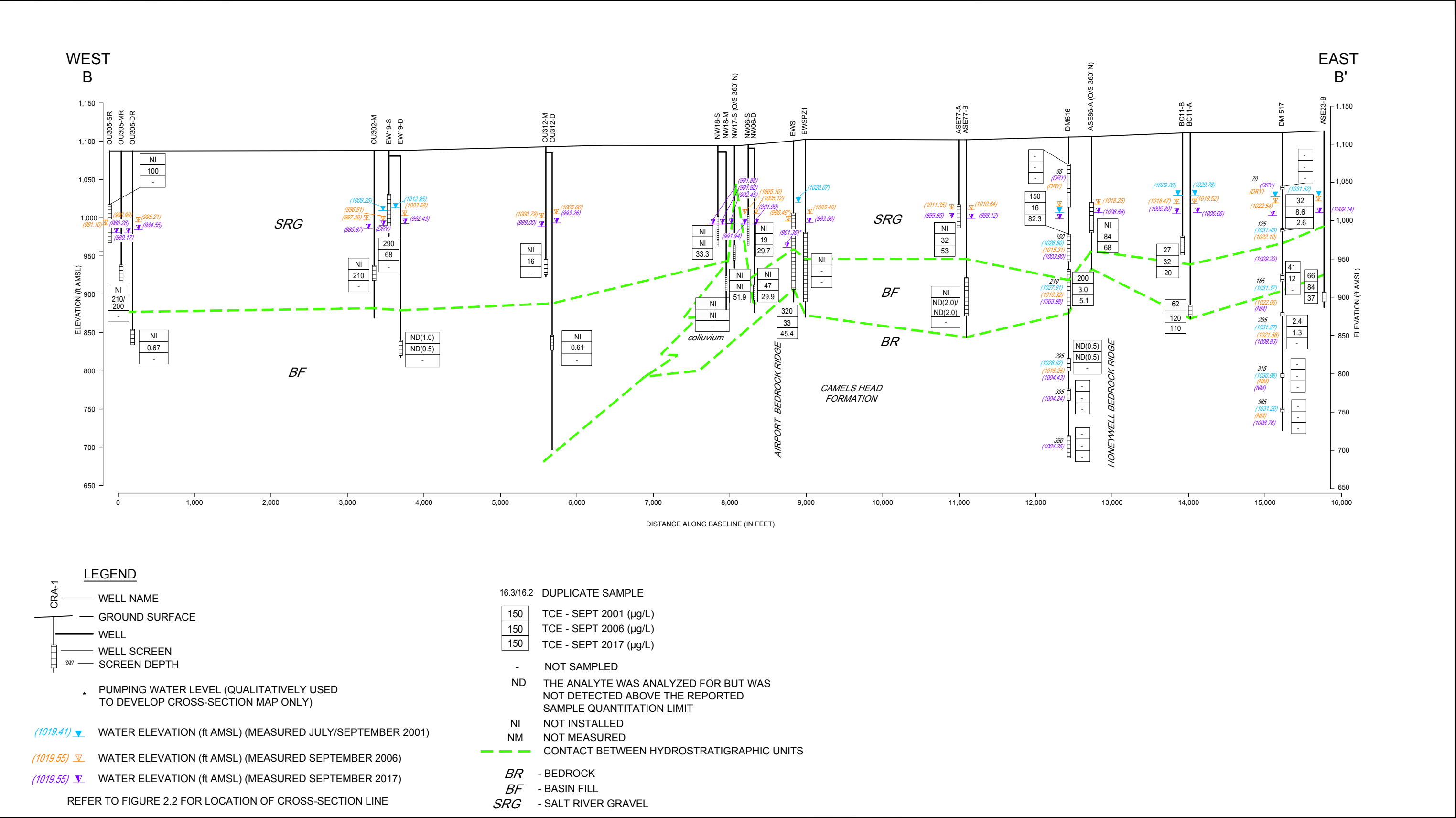


OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

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Feb 12, 2018

TCE DISTRIBUTION GEOLOGIC CROSS-SECTION A-A'

FIGURE 3.26

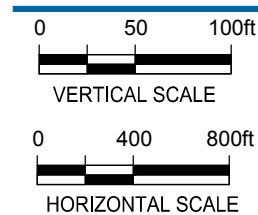
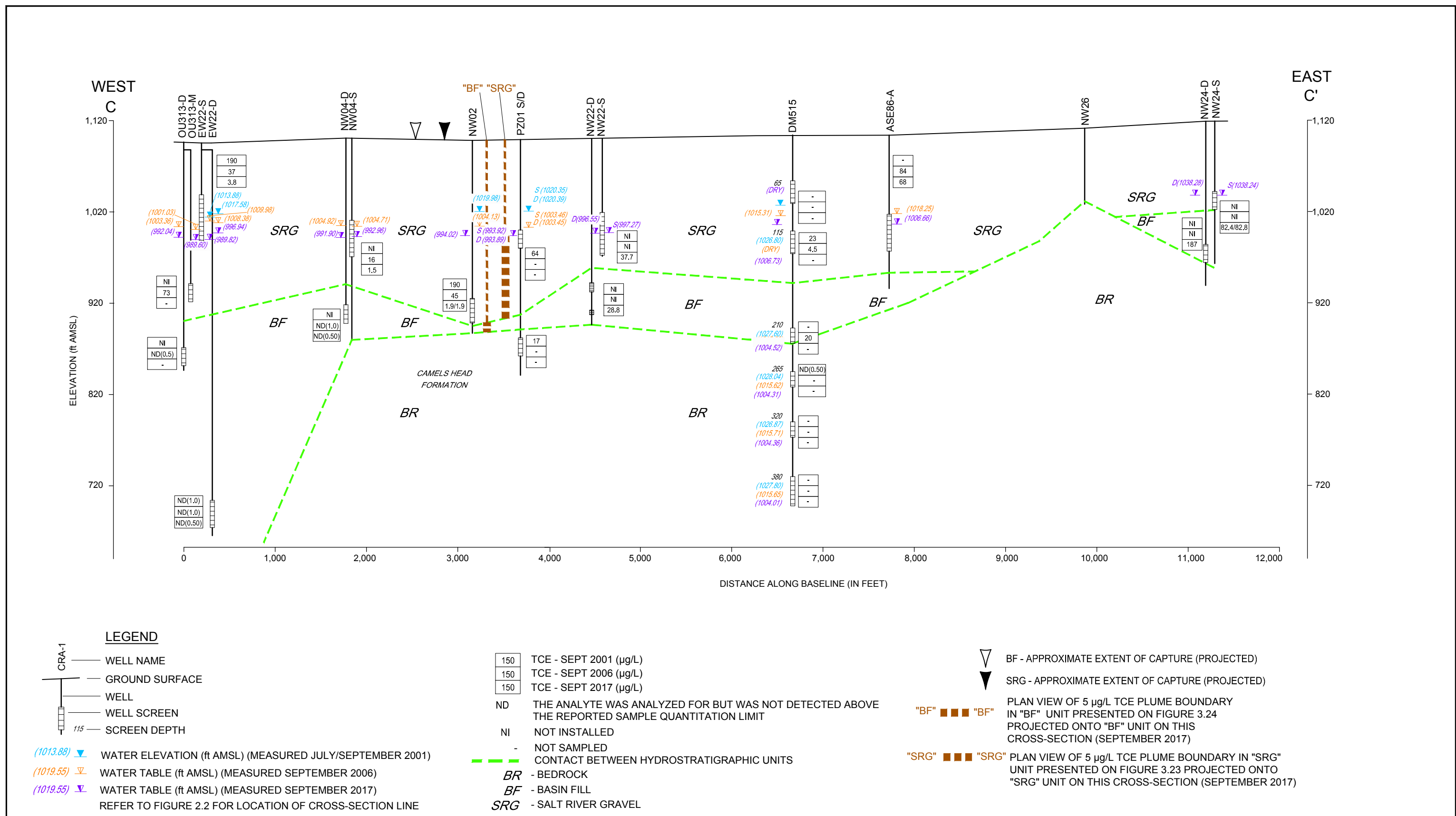


OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

TCE DISTRIBUTION GEOLOGIC CROSS-SECTION B-B'

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Aug 14, 2018

FIGURE 3.27



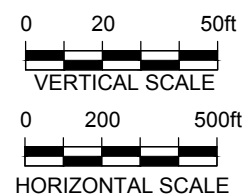
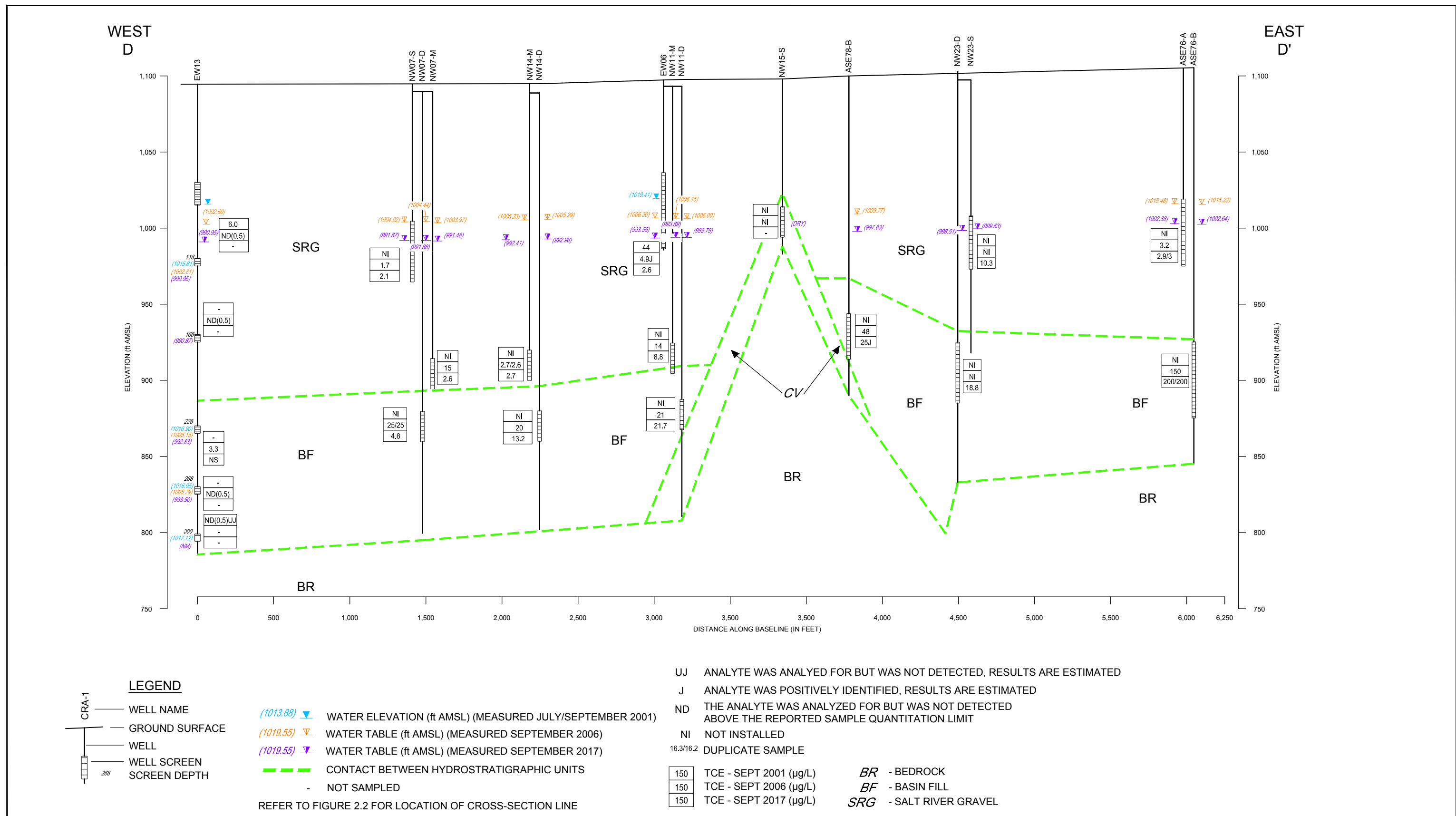
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

013932-151

Feb 12, 2018

TCE DISTRIBUTION GEOLOGIC CROSS-SECTION C-C'

FIGURE 3.28

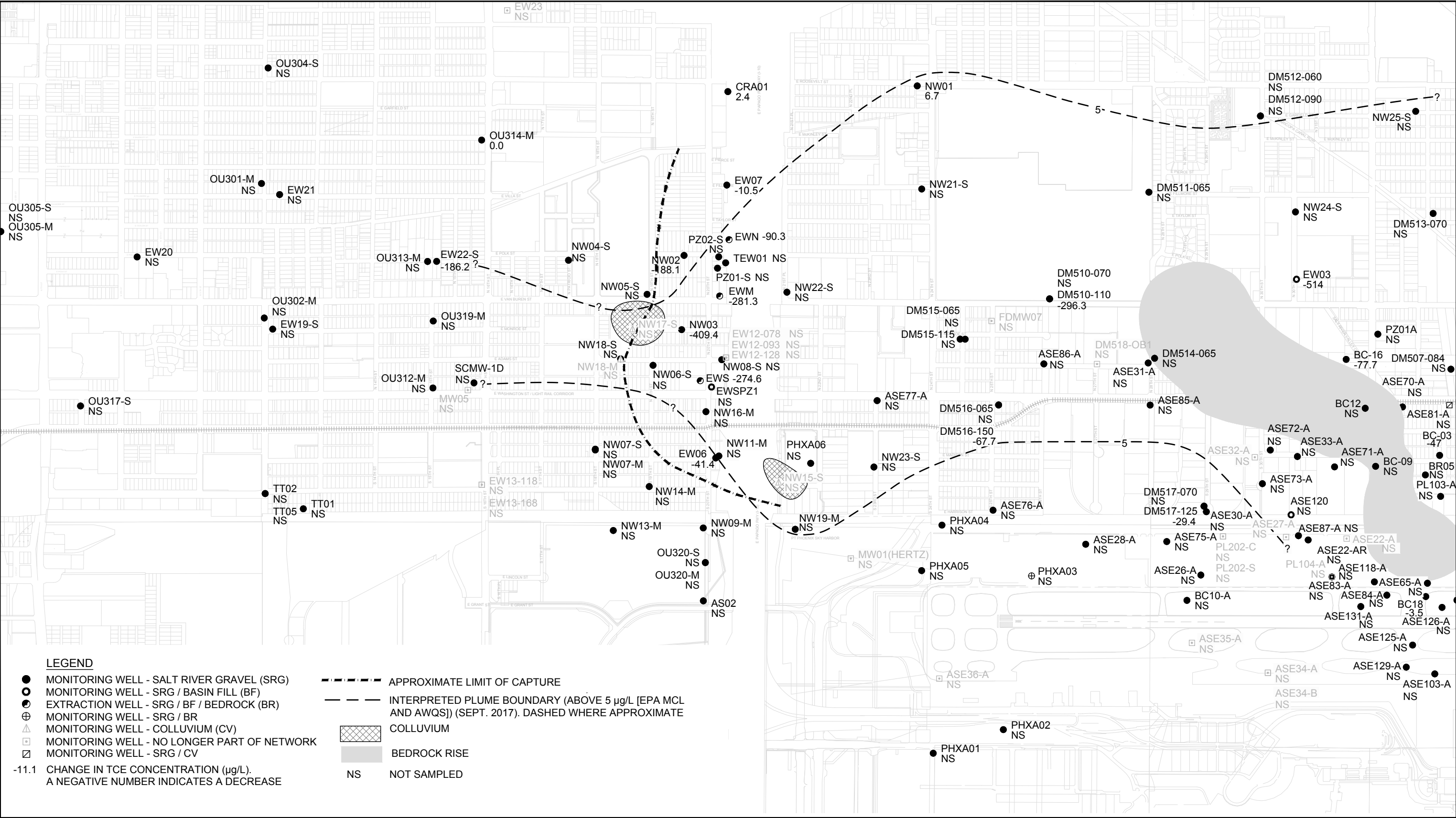


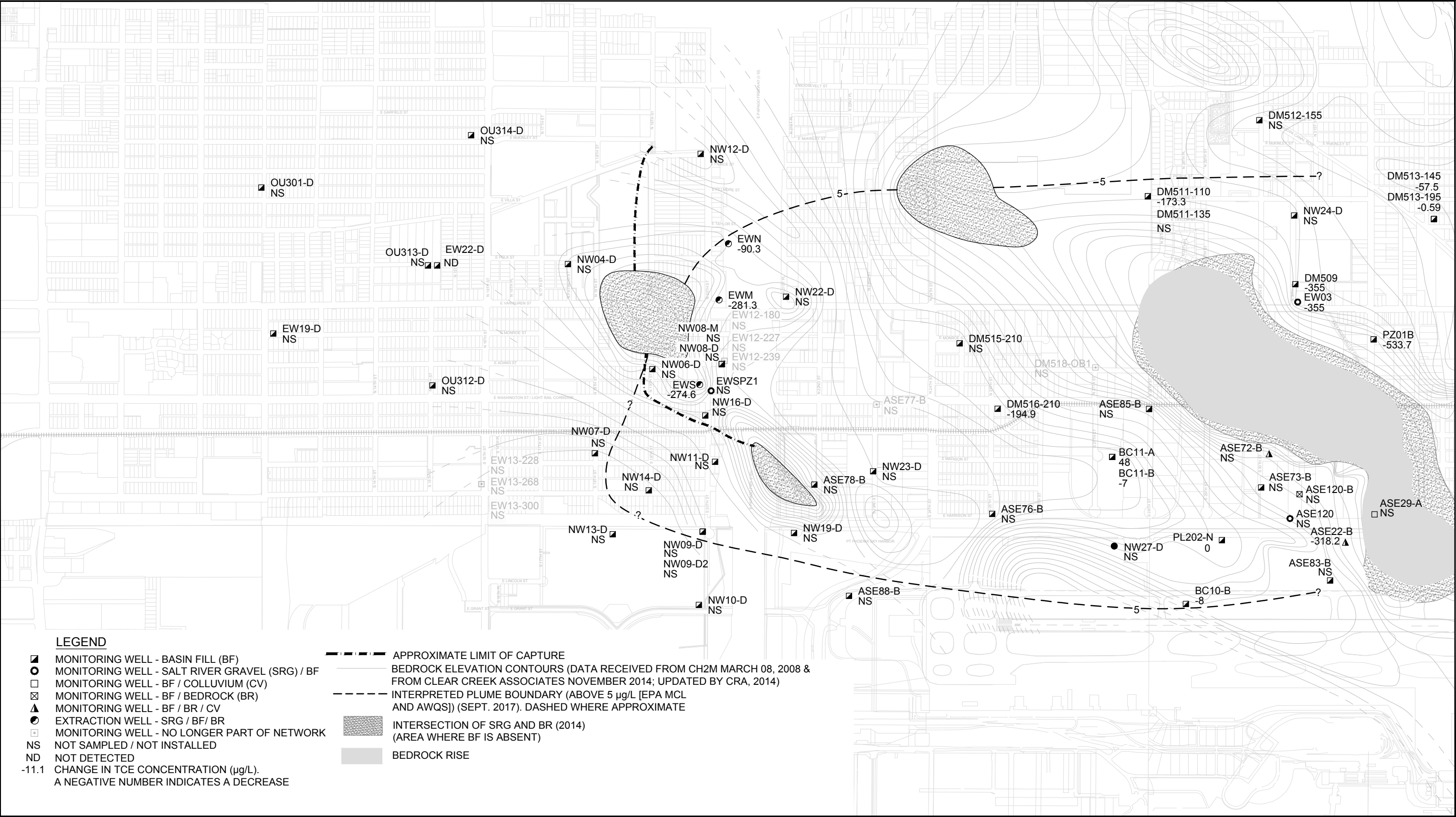
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

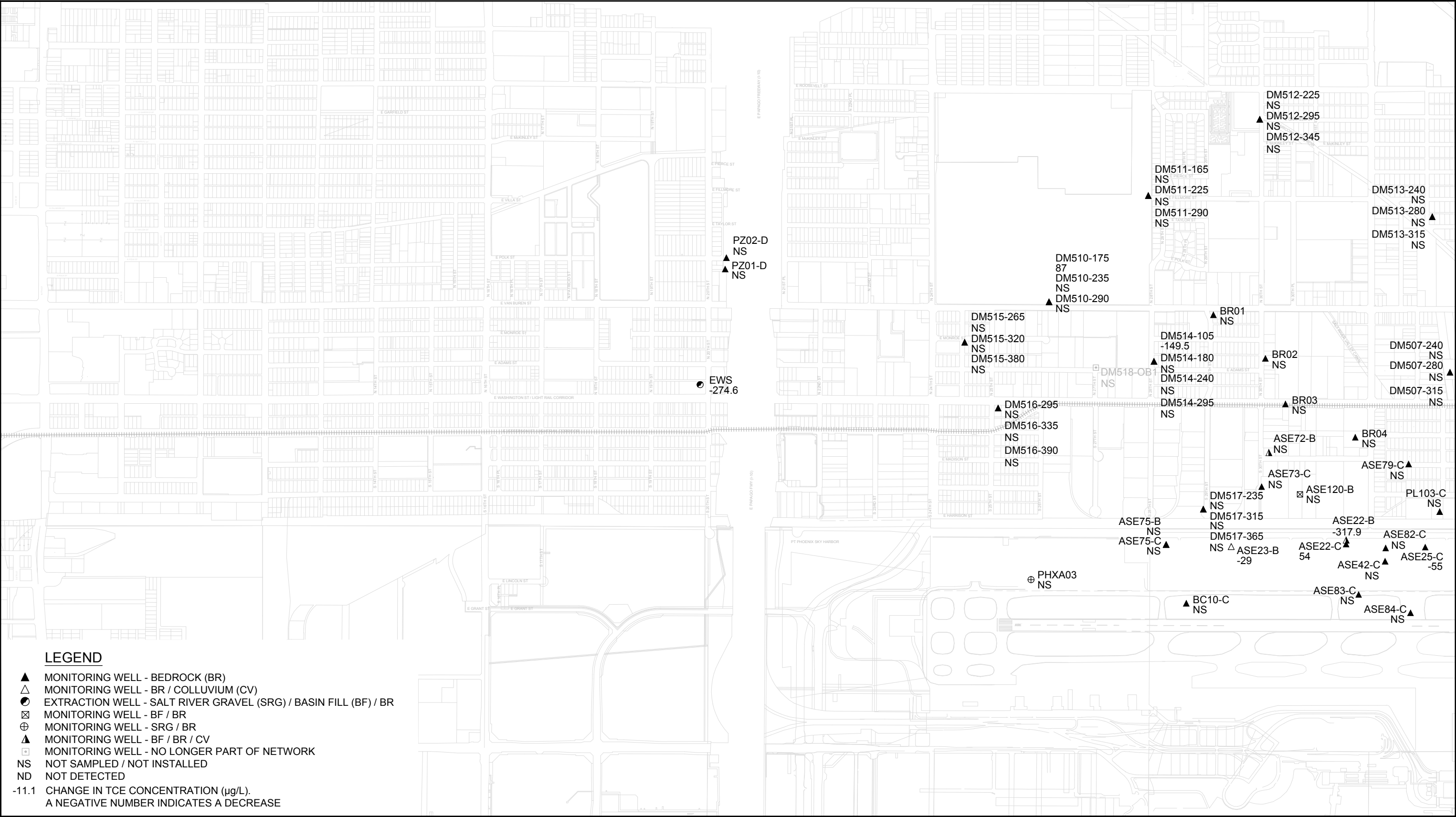
013932-151
Feb 8, 2018

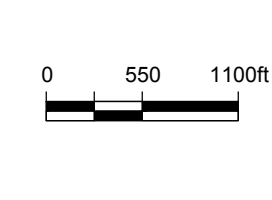
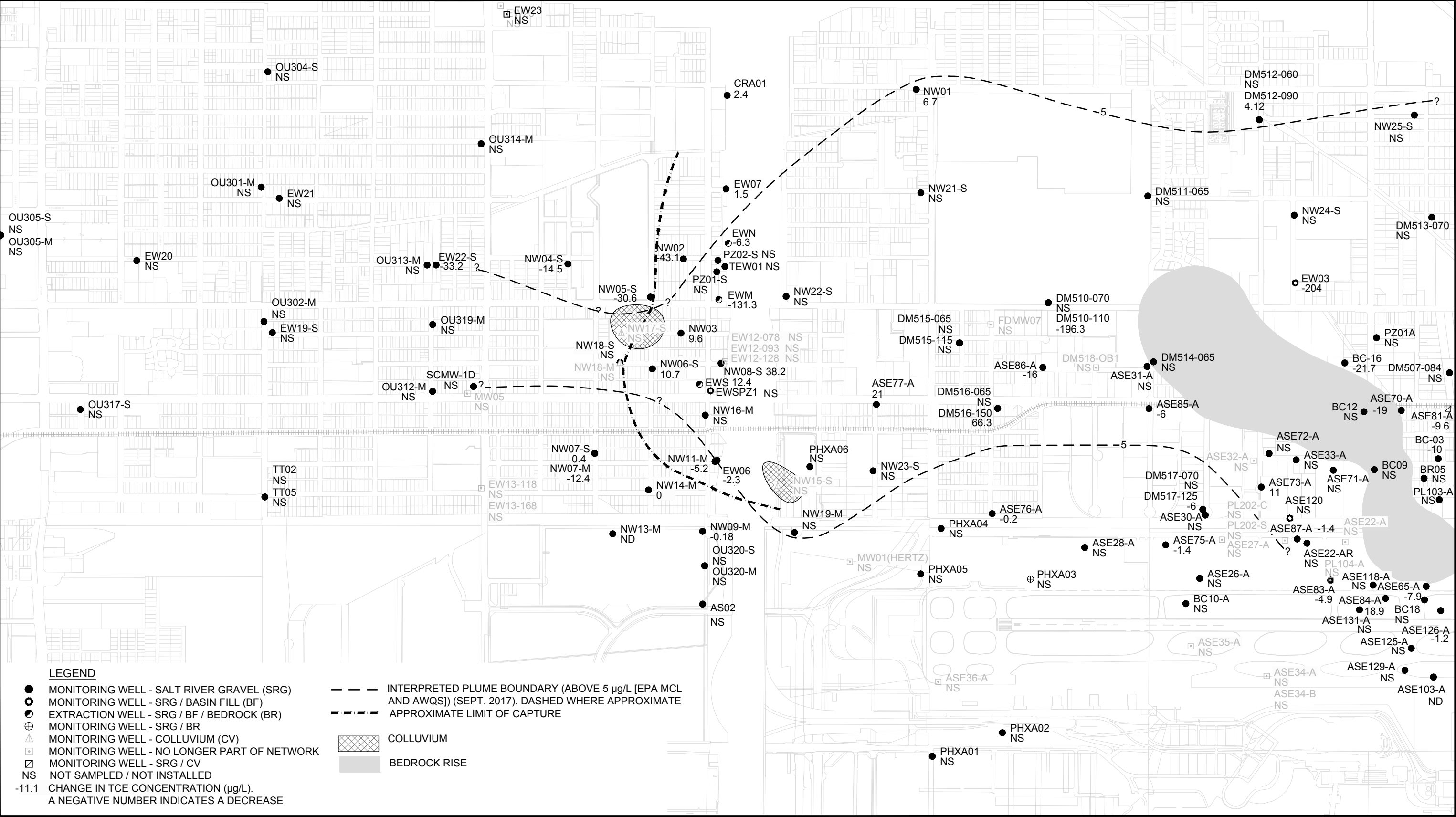
TCE DISTRIBUTION GEOLOGIC CROSS-SECTION D-D'

FIGURE 3.29





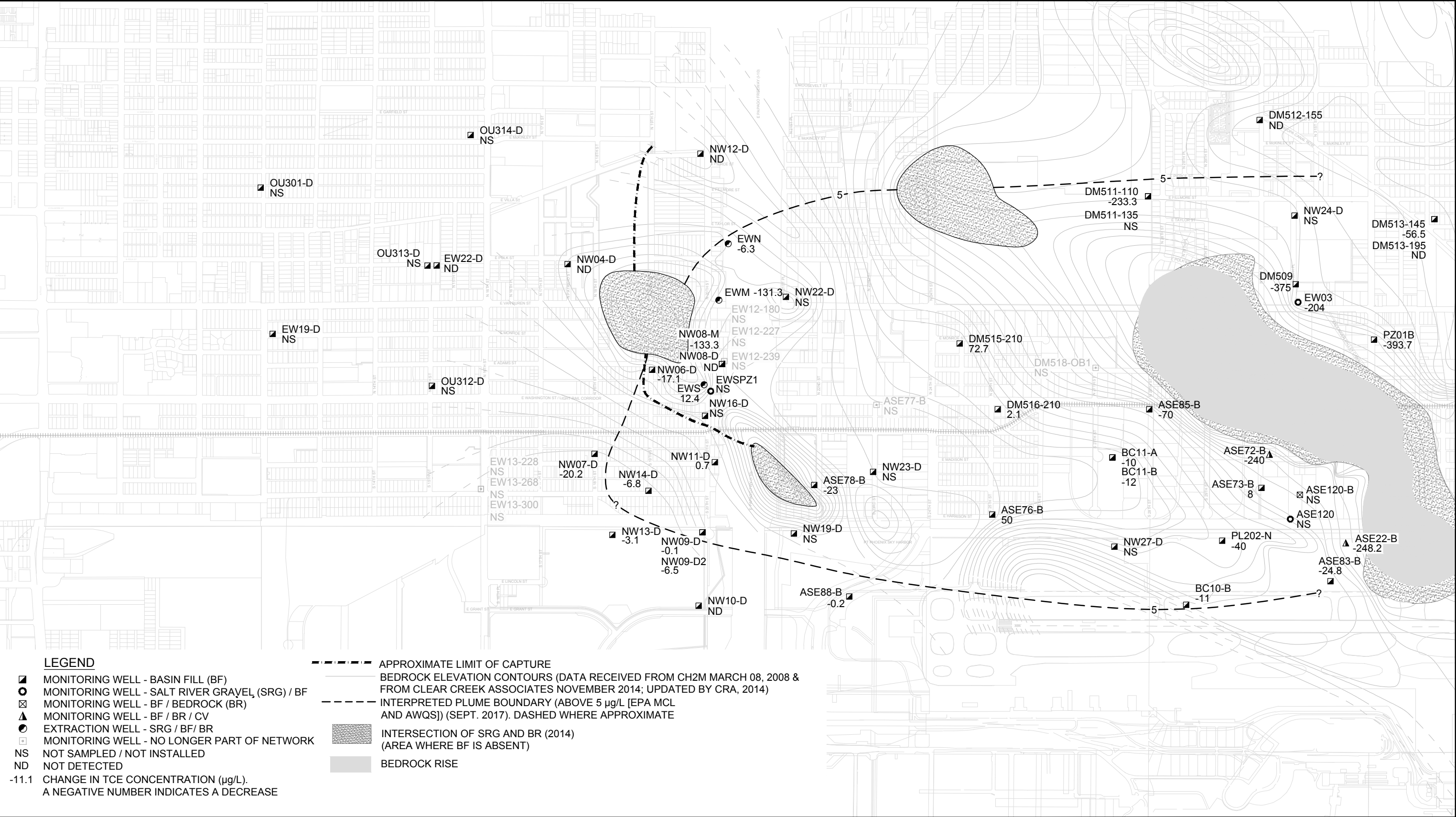


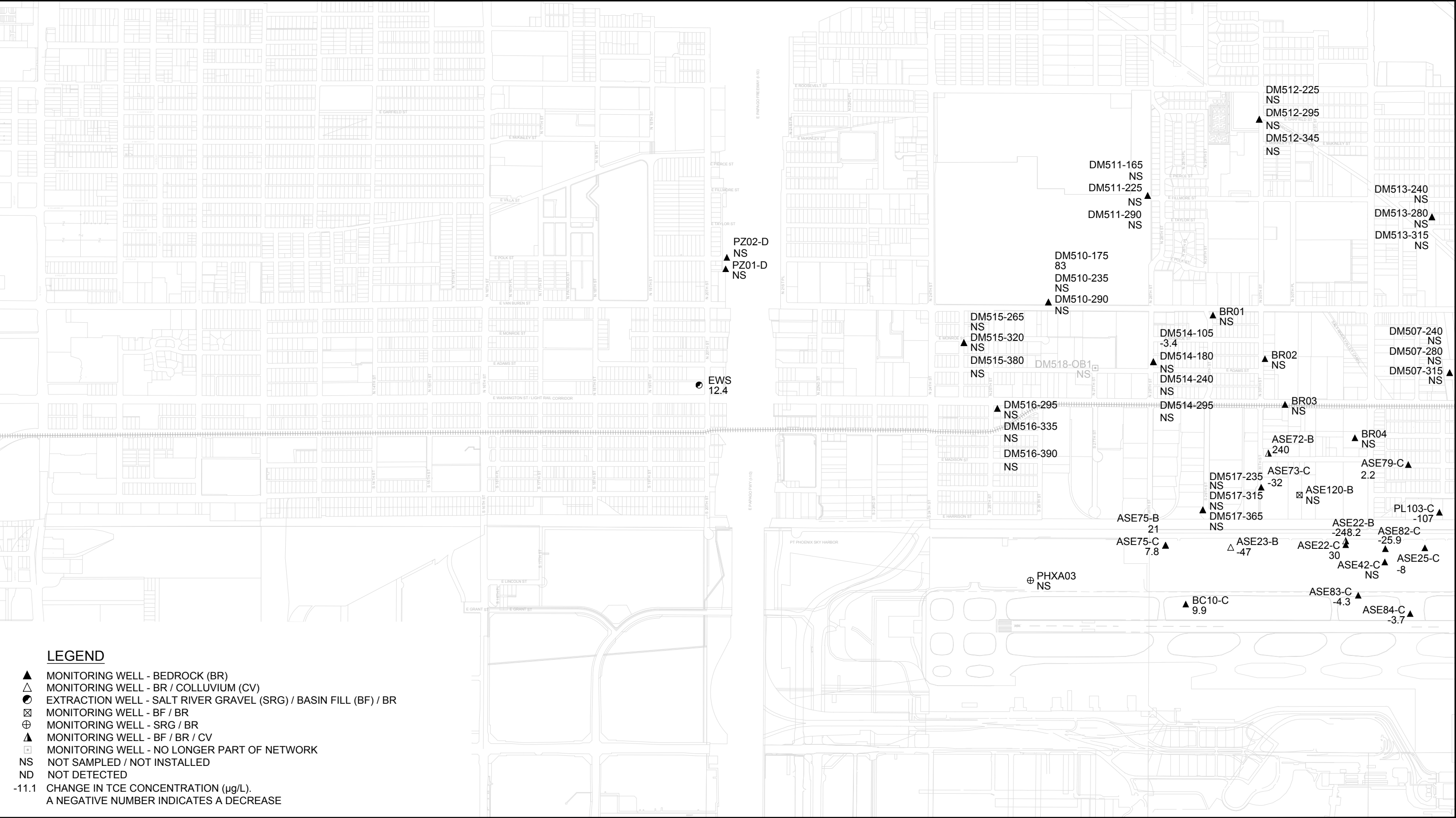


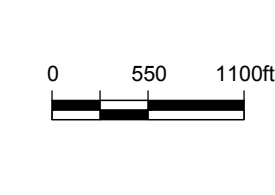
OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017
CHANGE IN TCE CONCENTRATIONS
SEPT. 2006 TO SEPT. 2017 - SRG

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FIGURE 3.33

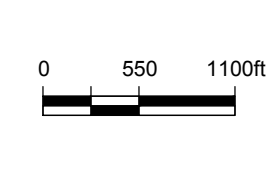
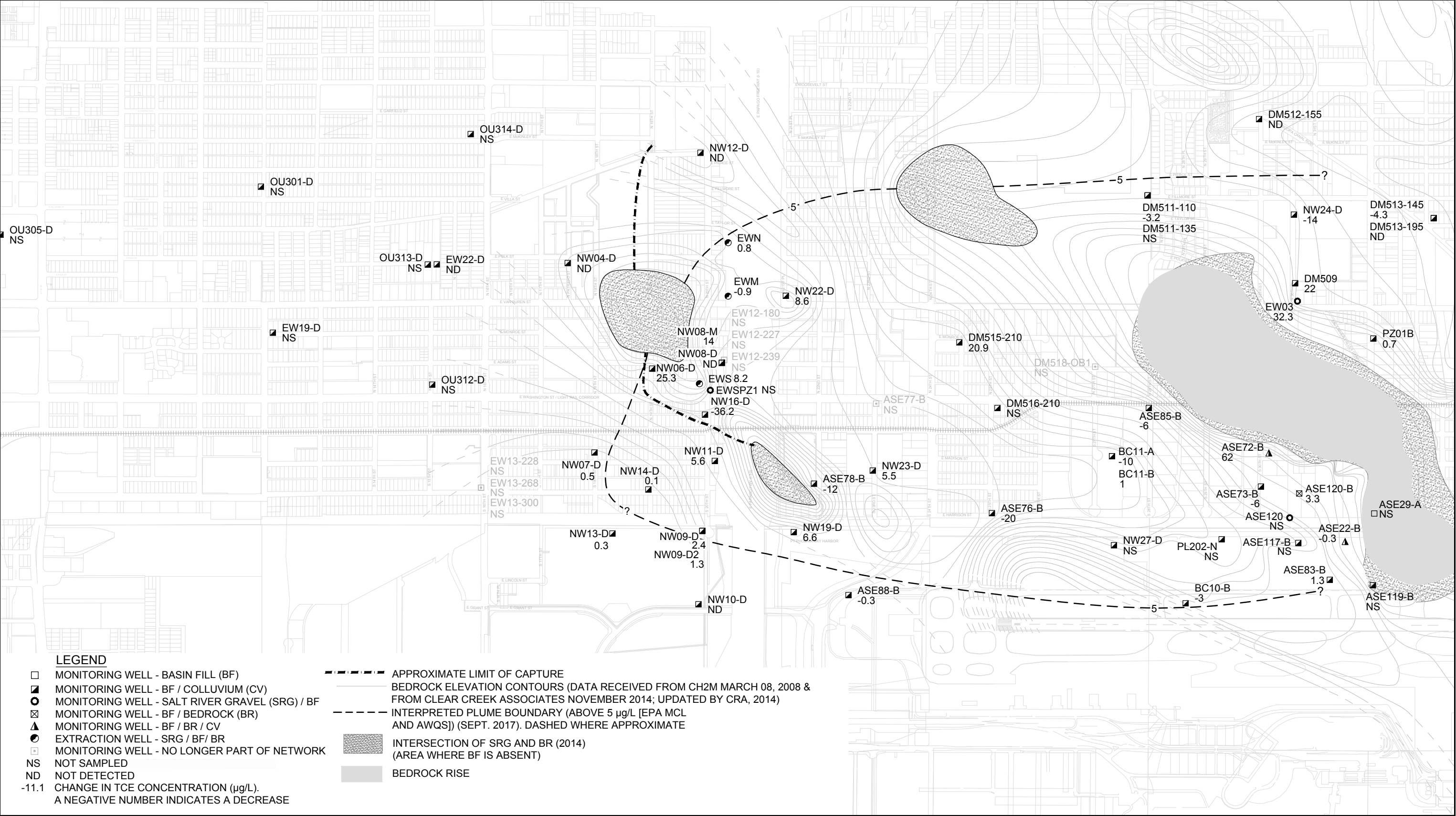






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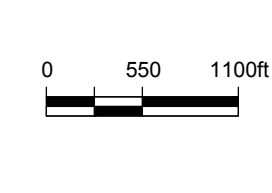
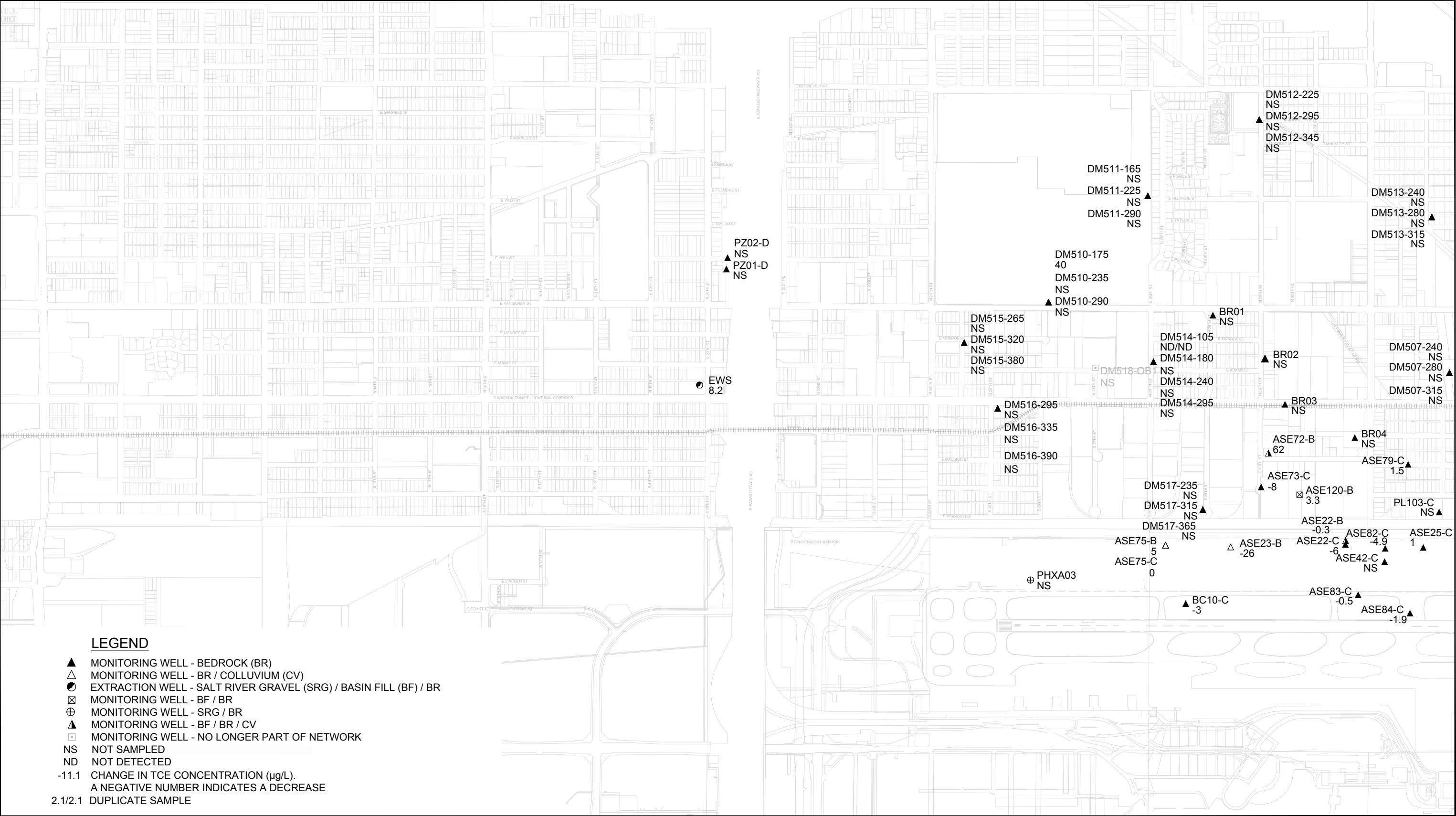
FIGURE 3.36



OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017
CHANGE IN TCE CONCENTRATIONS
SEPT. 2016 TO SEPT. 2017 - BF

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Sep 19, 2018

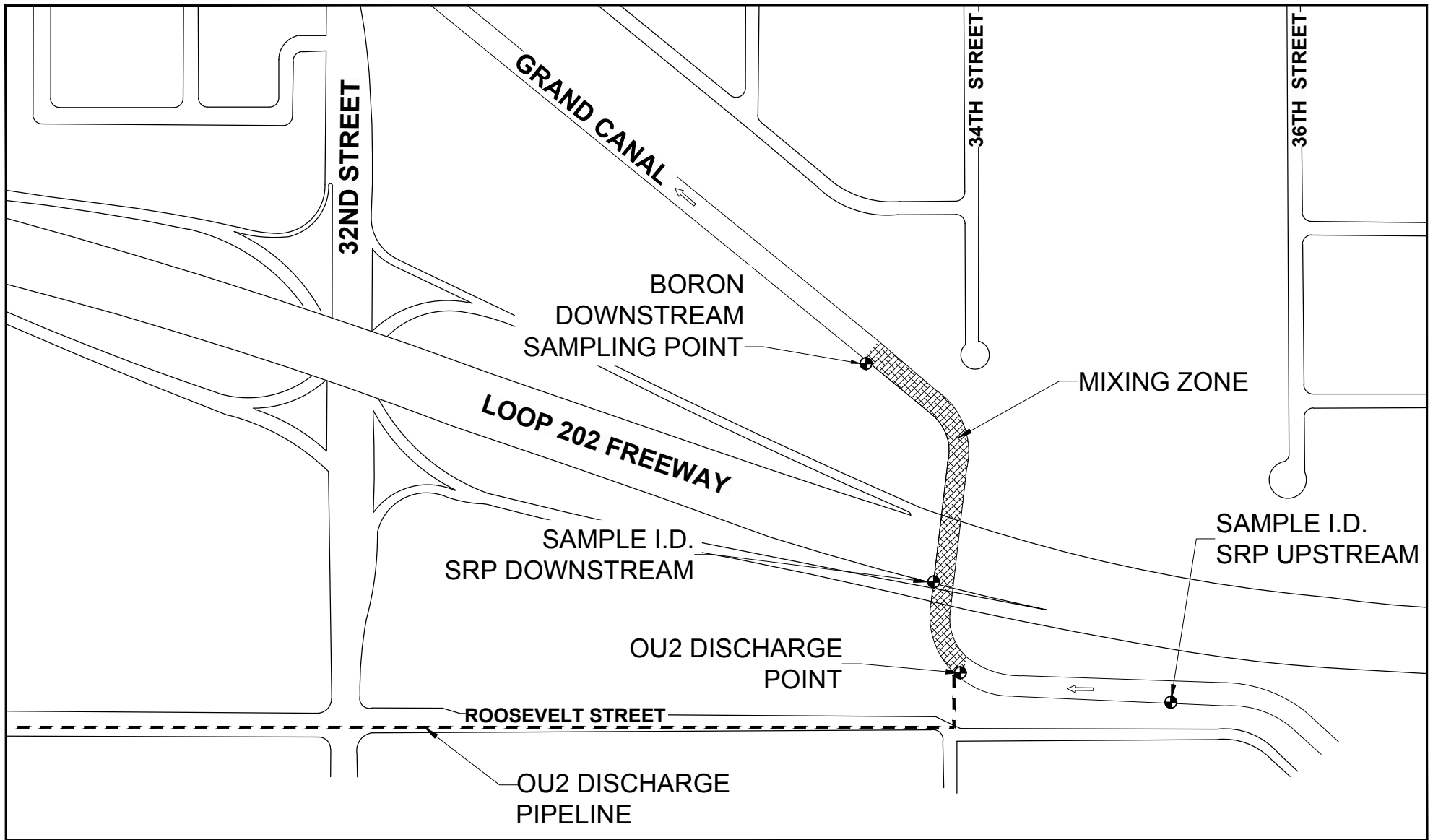
FIGURE 3.37



OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017
CHANGE IN TCE CONCENTRATIONS
SEPT. 2016 TO SEPT. 2017 - BR

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Sep 20, 2018

FIGURE 3.38



0 150 300ft

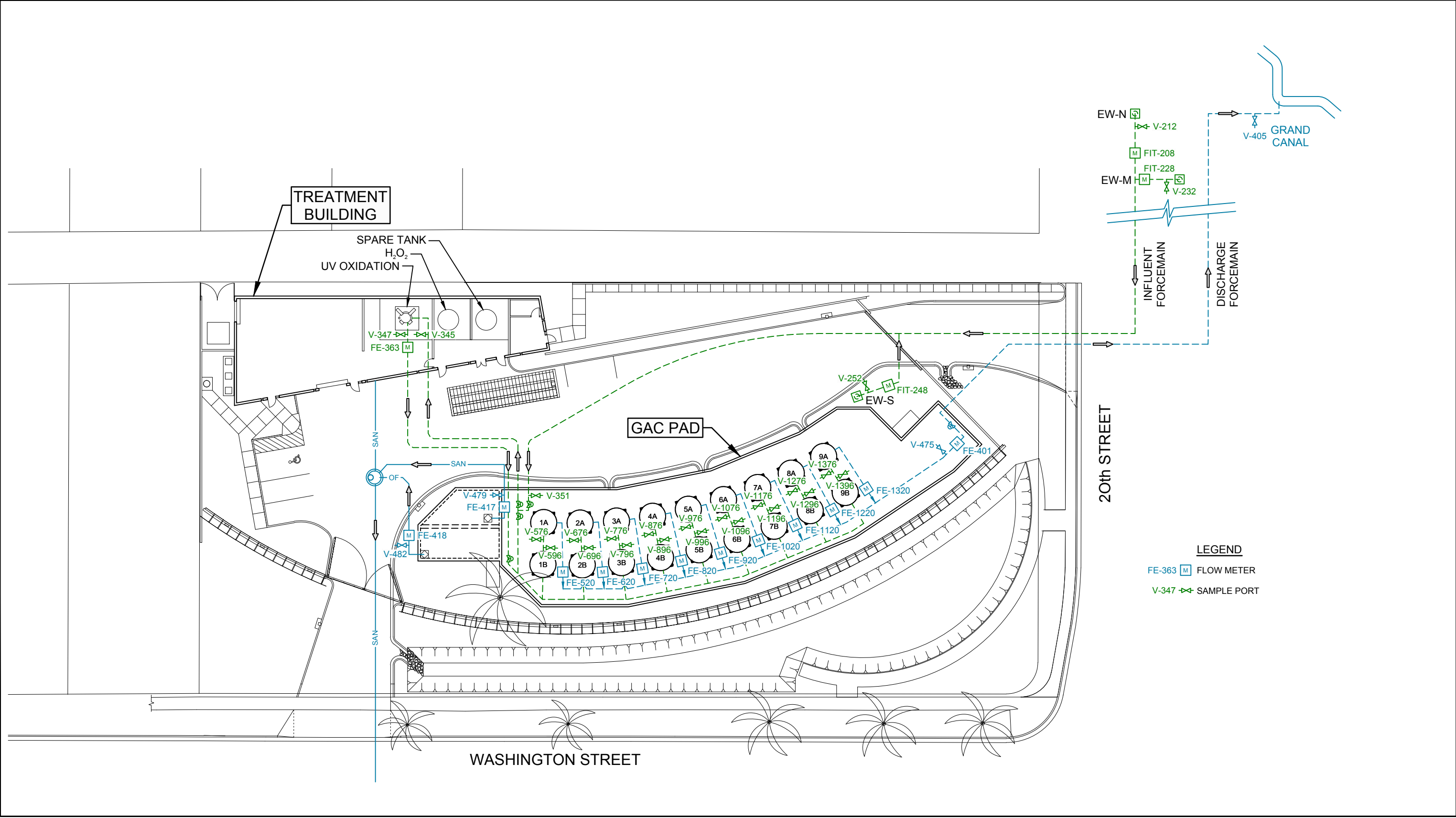


OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

SRP GRAND CANAL SAMPLING LOCATIONS

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FIGURE 4.1



0 18 35ft



OPERABLE UNIT 2 AREA
52ND STREET SUPERFUND SITE, PHOENIX, ARIZONA
EFFECTIVENESS REPORT - 2017

PROCESS SAMPLING LOCATIONS

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FIGURE 4.2

Tables

Table 3.1

**Groundwater Monitoring Well Network
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Well ID Monitoring Wells/	Construction Type	Location	Monitoring	
			Hydraulic	Water Quality
BC-16	C	32nd Street, between E Van Buren and Washington Streets	X	X
CRA01	C	I-10 and Roosevelt Street	X	X
DM509	C	N 30th Place and E Van Buren	X	X
DM515-210	C	N 24th Place and Monroe Street	X	
EW03	C	N 30th Place and E Van Buren	X	X
EW06	C	20th Street and Madison Street	X	X
EW07	C	20th Street and Fillmore Street	X	X
EW19-S	C	12th Street and Monroe Street	X	
EW21	C	12th Street and Fillmore Street	X	
EW22-D	C	15th Street and Polk Street	X	X
EW22-S	C	15th Street and Polk Street	X	X
EWSPZ1	C	20th Street north of Washington Street	X	
NW01	C	24th Street and Roosevelt Street	X	X
NW02	C	Between 19th and 20th Streets on Polk Street	X	X
NW03	C	Between 19th and 20th Streets on Monroe Street	X	X
NW04-S & D	C	Patricio, between Polk and Van Buren	X	X
NW05-S	C	19th Street, between Van Buren and Polk	X	X
NW06-S & D	C	19th Street, between Adams and Washington Streets	X	X
NW07-S, M, & D	C	18th Street, between Madison and Jefferson Streets	X	X
NW08-S, M, & D	C	20th Street and Adams Street	X	X
NW09-D, D2, & M	C	20th Street, south of UPRR track	X	X
NW10-D	C	Sky Harbor Circle and 20th Street	X	X
NW11-M & D	C	20th Street and Madison Street	X	X
NW12-D	C	Villa Street and 20th Street	X	X
NW13-M & D	N	South of UPRR track and west of 19th Street	X	X
NW14-M & D	N	19th Street and Jackson Street	X	X
NW15-S	C	Jackson Street east of 22nd Street	X	X
NW16-M & D	N	20th Street south of Washington Street	X	X
NW17-S	C	Monroe Street west of 19th Street	X	X
NW18-S & M	C	Adams Street east of 18th Street	X	X
NW19-M & D	C	Harrison Street and 24th Street	X	X
NW21-S	C	24th Street and Fillmore Street	X	X
NW22-S & D	C	21st Place and Van Buren Street	X	X
NW23-S & D	C	23rd Street & Madison Street	X	X
NW24-S & D	C	28th Street south of Fillmore Street	X	X
NW25-S	C	33rd Street and Garfield Street	X	X
OU312-M & D	C	15th Street and Adams Street	X	X
OU313-M & D	C	15th Street and Polk Street	X	
OU314-M & D	C	McKinley Street and 16th Street	X	

Table 3.1

**Groundwater Monitoring Well Network
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Well ID Monitoring Wells/	Construction Type	Location	Monitoring	
			Hydraulic	Water Quality
PZ01-S & D	N	I-10 and Polk Street	X	
PZ02-S & D	N	I-10 and Polk Street	X	
TEW01	C	I-10 and Polk Street	X	
PZ01-A & B	C	32nd Street, between E Van Buren and Washington Streets	X	X

Notes:

S - Shallow

D - Deep

M - Middle

C - Conventional Well

N - Nested Well

Table 3.2

Summary of Monitoring Well Construction Details
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Easting NAD27	Northing NAD27	Hydro- stratigraphic Unit of Well Screen	Reference Elevation (ft AMSL)	Ground Elevation (ft AMSL)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft AMSL) NGVD29
OU2 GES Network Wells								
BC16	470,549.00	891,043.00	SRG	1,116.02	NI	70.0	85.0	1,046.02
CRA01	463,136.23	894,253.99	SRG	1,106.43	1,107.29	105.5	125.5	1,000.93
DM509	469,954.81	891,992.81	BF	1,114.06	1,114.58	124.0	175.0	990.06
EW03	469,954.19	892,003.38	SRG/BF	1,114.75	1,114.60	57.0	107.0	1,057.75
EW06	463,030.97	889,882.84	SRG	1,097.75	1,097.75	61.0	111.0	1,036.75
EW07	463,123.11	893,133.29	SRG	1,104.96	1,105.20	78.0	128.0	1,026.96
EW19-D	(3) 457,697.83	891,405.06	BF	1,087.48	1,087.85	247.0	267.0	840.48
EW19-S	(3) 457,678.87	891,405.37	SRG	1,087.42	1,087.74	57.0	107.0	1,030.42
EW21	(3) 457,761.90	893,019.02	SRG	1,094.11	1,094.80	58.0	108.0	1,036.11
EW22-D	459,655.30	892,217.60	BF	1,095.75	1,096.33	407.0	427.0	688.75
EW22-S	459,644.28	892,218.24	SRG	1,095.72	1,096.39	58.0	108.0	1,037.72
EWM	463,149.81	891,836.24	SRG/BF	1,103.61	NI	86.0	206.0	1,017.61
EWN	463,150.06	892,478.65	SRG/BF	1,110.78	NI	100.0	220.0	1,010.78
EWS	462,804.97	890,786.77	SRG/BF/BR	1,100.37	NI	94.0	194.0	1,006.37
EWSPZ1	462,940.00	890,712.00	SRG/BF	1,098.26	NI	118.0	208.0	980.26
NW01	465,406.43	894,322.64	SRG	1,112.22	1,112.22	90.0	110.0	1,022.22
NW02	462,610.64	892,289.91	SRG	1,101.83	1,101.83	173.0	193.0	928.83
NW03	462,590.35	891,405.62	SRG	1,096.92	1,097.16	120.0	140.0	976.92
NW04-D	461,225.33	892,235.10	BF	1,098.93	1,100.39	183.0	203.0	915.93
NW04-S	461,225.30	892,231.81	SRG	1,098.86	1,100.37	90.0	130.0	1,008.86
NW05-S	462,214.74	891,833.81	SRG	1,098.84	1,100.37	88.0	128.0	1,010.84
NW06-D	462,238.65	890,968.88	BF	1,095.53	1,097.30	181.5	201.5	914.03
NW06-S	462,239.01	890,971.81	SRG	1,095.49	1,097.29	89.5	129.5	1,005.99
NW07-D	461,546.77	889,962.89	BF	1,094.03	1,094.45	215.0	235.0	879.03
NW07-M	461,546.79	889,956.83	SRG	1,093.89	1,094.40	180.0	200.0	913.89
NW07-S	461,546.74	889,966.35	SRG	1,094.12	1,094.44	90.0	130.0	1,004.12
NW08-D	463,071.52	891,034.69	BF	1,098.68	1,099.02	224.0	244.0	874.68
NW08-M	463,075.33	891,037.96	BF	1,097.55	1,098.94	175.0	195.0	922.55
NW08-S	463,071.95	891,042.29	SRG	1,097.39	1,098.80	100.0	150.0	997.39
NW09-D	463,002.21	889,027.40	BF	1,099.58	1,099.84	210.0	230.0	889.58
NW09-D2	462,997.99	889,026.62	BF	1,099.30	1,099.87	240.0	260.0	859.30
NW09-M	462,996.54	889,032.87	SRG	1,099.42	1,099.92	170.0	190.0	929.42
NW10-D	463,012.51	888,143.23	BF	1,098.91	1,099.47	210.0	230.0	888.91
NW11-D	463,035.91	889,880.93	BF	1,097.69	1,098.07	210.0	230.0	887.69
NW11-M	463,028.37	889,884.51	SRG	1,097.59	1,098.14	173.0	193.0	924.59
NW12-D	462,818.29	893,558.17	BF	1,104.23	1,104.55	225.0	245.0	879.23
NW13-D	461,903.18	889,018.75	BF	1,096.61	1,096.93	215.0	235.0	881.61
NW13-M	461,903.43	889,018.53	SRG	1,096.67	1,096.93	175.0	195.0	921.67
NW14-D	462,203.48	889,564.00	BF	1,096.12	1,096.35	215.0	235.0	881.12

Table 3.2

**Summary of Monitoring Well Construction Details
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Well ID	Easting NAD27	Northing NAD27	Hydro- stratigraphic Unit of Well Screen	Reference Elevation (ft AMSL)	Ground Elevation (ft AMSL)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft AMSL) NGVD29
OU2 GES Network Wells (cont'd)								
NW14-M	462,203.25	889,563.85	SRG	1,096.11	1,096.35	175.0	195.0	921.11
NW15-S	463,755.88	889,597.93	Colluvium	1,098.96	1,099.31	84.0	104.0	1,014.96
NW16-D	462,882.12	890,437.08	BF	1,097.96	1,098.30	220.0	230.0	877.96
NW16-M	462,882.12	890,437.08	SRG	1,097.92	1,098.30	155.0	175.0	942.92
NW17-S	461,993.75	891,409.94	Colluvium	1,096.75	1,097.00	130.0	145.0	966.75
NW18-M	461,857.01	891,048.77	Colluvium	1,094.92	1,095.27	170.0	190.0	924.92
NW18-S	461,850.21	891,048.98	SRG	1,094.78	1,095.26	90.0	130.0	1,004.78
NW19-D	463,938.05	889,006.25	BF	1,100.50	1,101.06	205.0	220.0	895.50
NW19-M	463,943.91	889,005.87	SRG	1,100.69	1,101.28	165.0	185.0	935.69
NW21-S	465,460.68	893,086.29	SRG	1,106.65	1,107.24	91.0	106.0	1,015.65
NW22-S	463,843.81	891,848.19	SRG	1,099.36	1,100.09	95.0	130.0	1,004.36
NW22-D	463,843.61	891,843.41	BF	1,099.67	1,100.13	160.0	170.0	939.67
						190.0	195.0	909.67
NW23-S	464,887.16	889,752.00	SRG	1,101.26	1,101.52	95.0	130.0	1,006.26
NW23-D	464,887.25	889,747.07	BF	1,101.13	1,101.49	178.0	218.0	923.13
NW24-S	469,941.18	892,811.22	SRG	1,116.54	1,116.94	77.0	97.0	1,039.54
NW24-D	469,941.04	892,816.84	BF	1,116.59	1,117.07	135.0	155.0	981.59
NW25-S	471,383.40	894,018.24	SRG	1,128.40	1,128.74	95.0	115.0	1,033.40
NW27-D	(1) 467,472.92	888,977.29	BF	1,111.36	1,111.86	175.0	215.0	936.36
OU312-D	(3) 459,599.15	890,776.43	BF	1,090.77	NI	245.6	265.6	845.17
OU312-M	(3) 459,599.97	890,700.12	SRG	1,090.79	NI	146.7	166.7	944.09
OU313-D	(3) 459,546.09	892,217.30	BF	1,095.71	NI	224.7	244.7	871.01
OU313-M	(3) 459,536.02	892,217.15	SRG	1,095.75	NI	154.7	174.7	941.05
OU314-D	(3) 460,195.17	893,851.88	BF	1,099.14	NI	231.2	251.2	867.94
OU314-M	(3) 460,183.85	893,673.11	SRG	1,099.05	NI	145.7	165.7	953.35
PZ01A	470,929.00	891,345.00	SRG	1,117.04	NI	70.0	75.0	1,047.04
PZ01B	470,930.00	891,353.00	BF	1,117.05	NI	120.0	125.0	997.05
PZ01-D	463,124.48	892,169.75	BR	1,102.69	1,102.46	217.0	237.0	885.69
PZ01-S	463,124.48	892,169.75	SRG	1,102.69	1,102.46	99.0	119.0	1,003.69
PZ02-D	463,138.84	892,306.08	BR	1,107.95	1,108.25	245.0	265.0	862.95
PZ02-S	463,138.84	892,306.08	SRG	1,107.95	1,108.25	120.0	140.0	987.95
TEW01	463,111.30	892,203.14	SRG	1,103.56	1,103.85	100.0	145.0	1,003.56
OU2 GES Supplemental Wells								
AS02	(1) 463,059.52	888,148.52	SRG	1,099.75	1,098.90	50.0	90.0	1,049.75
ASE28-A	(1) 467,463.76	888,923.82	SRG	1,108.20	NI	68.0	88.0	1,040.20
ASE76-A	(1) 466,354.46	889,252.70	SRG	1,105.42	NI	80.0	130.0	1,025.42
ASE76-B	(1) 466,346.35	889,253.15	BF	1,105.34	NI	180.0	230.0	925.34
ASE77-A	(1) 464,925.48	890,548.28	SRG	1,101.86	NI	85.0	115.0	1,016.86
ASE77-B	(1) 464,927.37	890,548.37	BF	1,101.76	NI	180.0	230.0	921.76

Table 3.2

**Summary of Monitoring Well Construction Details
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Well ID		Easting NAD27	Northing NAD27	Hydro- stratigraphic Unit of Well Screen	Reference Elevation (ft AMSL)	Ground Elevation (ft AMSL)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft AMSL) NGVD29
OU2 GES Supplemental Wells (cont'd)									
ASE78-B	(1)	464,216.08	889,597.38	BF	1,099.97	NI	156.0	186.0	943.97
ASE86-A	(1)	466,982.30	890,992.82	SRG	1,106.07	NI	86.0	126.0	1,020.07
ASE88-B	(1)	464,805.79	888,313.43	BF	1,103.08	NI	175.0	215.0	928.08
ASE131-A	(1)	470,513.35	888,125.48	SRG	1,115.83	1,116.33	85.0	115.0	1,030.83
BC11-A	(1)	467,741.10	889,919.54	Colluvium	1,111.21	NI	225.0	240.0	886.21
BC11-B	(1)	467,756.54	889,918.78	BF	1,111.25	NI	135.0	160.0	976.25
DM510-110	(2)	466,993.20	891,769.10	SRG	1,107.40	NI	110.00	NI	997.40
DM515-115	(2)	465,925.20	891,282.80	SRG	1,103.61	NI	115.0	NI	988.61
DM515-210	(2)	465,925.20	891,282.80	BF	1,103.61	NI	210.0	NI	893.61
DM515-265	(2)	465,925.20	891,282.80	BR	1,103.61	NI	265.0	NI	838.61
EW13-118	(3)	460,187.58	889,593.26	SRG	1,092.71	NI	114.5	119.5	980.11
EW13-168	(3)	460,187.58	889,593.26	SRG	1,092.71	NI	164.5	169.5	930.11
EW13-228	(3)	460,187.58	889,593.26	BF	1,092.71	NI	224.5	229.5	870.11
EW13-268	(3)	460,187.58	889,593.26	BF	1,092.71	NI	264.5	269.5	830.11
PHXA01		456,741.46	886,453.17	SRG	1,102.77	NI	50.0	140.0	1,052.77
PHXA02		466,697.76	886,711.33	SRG	1,105.51	NI	50.0	140.0	1,055.51
PHXA03		466,920.55	888,579.21	SRG/BR	1,106.17	NI	53.0	106.5	1,053.17
PHXA04		465,703.16	889,055.62	SRG	1,104.58	NI	50.0	140.0	1,054.58
PHXA05		465,676.63	888,665.07	SRG	1,104.53	NI	50.0	140.0	1,054.53
PHXA06		464,128.81	889,796.69	SRG	1,100.41	NI	50.0	140.0	1,050.41
OU3 Supplemental Wells									
OU319-M	(3)	459,603.65	891,503.11	SRG	1,091.21	NI	150.0	170.0	941.21
OU320-M	(3)	463,037.94	888,765.34	SRG	1,100.12	NI	160.0	180.0	940.12
OU320-S	(3)	463,039.57	888,757.42	SRG	1,100.20	NI	65.0	115.0	1,035.20
Well Damaged/Abandoned - Removed from Network in 2003									
EW12-093		463114.54	891064.43	SRG	1,098.84	1,098.84	91.0	96.0	1,007.84
EW12-128		463114.54	891064.43	SRG	1,098.84	1,098.84	126.0	131.0	972.84
EW12-180		463114.54	891064.43	BF	1,098.84	1,098.84	179	184	919.84
EW12-227		463114.54	891064.43	BF	1,098.84	1,098.84	224	229	874.84
EW12-239		463114.54	891064.43	BF	1,098.84	1,098.84	239	244	859.84
Wells Dry - Removed from Network in 2003									
FDMW07		466,298.03	891,504.25	SRG	1,104.57	1,104.57	55.0	85.0	1,049.57
MW01 (Hertz)		464,611.89	888,658.59	SRG	1,101.33	1,101.33	64.0	89.0	1,037.33
MW05 (Shurgin)		460,018.76	890,674.99	SRG	1,091.80	1,091.80	52.0	92.0	1,039.80
Well no longer accessible, removed from Network in 2007									
EW23		460,419.10	895,405.49	SRG	1,101.51	1,101.84	57.0	107.0	1,044.51

Table 3.2

**Summary of Monitoring Well Construction Details
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Well ID	Easting NAD27	Northing NAD27	Hydro- stratigraphic Unit of Well Screen	Reference Elevation (ft AMSL)	Ground Elevation (ft AMSL)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft AMSL) NGVD29
Wells Dry - Removed from Network in 2010 - Honeywell discontinued monitoring with ADEQ approval								
ASE36-A	465,671.30	887,215.73	SRG	1,102.58	NI	69.0	99.0	1,033.58
ASE77-B	464,927.37	890,548.37	BF	1,101.76	NI	180.0	230.0	921.76
Well Destroyed/Abandoned - Removed from Network August 2012								
DM518-OB1	467,562.31	890,987.13	SRG/BF/BR	1,106.75	1,107.29	58.0	150.0	1,048.75

Notes:

NAD - North American Datum

ft AMSL - feet Above Mean Sea Level

ft bgs - feet below ground surface

SRG - Salt River Gravels

BF - Basin Fill

BR - Bedrock

NI - No Information

(1) Quality data collected by CH2MHILL on behalf of Honeywell

(2) Quality data collected by Clear Creek Associates on behalf of Freescale

(3) Sampled by ERM on behalf of OU3 Working Parties

NGVD - National Geodetic Vertical Datum

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostrati- graphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
SRG Wells								
AS02	SRG	1,019.08	Dry	Dry	Dry	--	--	--
ASE19-A ¹	SRG	1,054.76	1,053.19	Dry	Dry	--	--	--
ASE20-A ¹	SRG	--	1,051.69	--	--	--	--	--
ASE22-A ¹	SRG	1,034.64	1,027.07	--	--	--	--	--
ASE22-AR ¹	SRG	--	--	1,010.15	1,013.39	--	--	3.2
ASE26-A ¹	SRG	1,032.07	1,023.60	Dry	Dry	--	--	--
ASE27-A ¹	SRG	1,033.33	--	Dry	Dry	--	--	--
ASE28-A ¹	SRG	1,028.36	Dry	Dry	Dry	--	--	--
ASE30-A ¹	SRG	1,031.05	Dry	Dry	Dry	--	--	--
ASE31-A ¹	SRG	1,030.47	Dry	Dry	Dry	--	--	--
ASE32-A ¹	SRG	1,032.24	Dry	Dry	Dry	--	--	--
ASE33-A ¹	SRG	1,032.83	1,023.70	Dry	Dry	--	--	--
ASE34-A ¹	SRG	--	1,025.49	Dry	Dry	--	--	--
ASE34-B ¹	SRG	--	1,025.30	1,008.10	1,011.18	--	-14.1	3.1
ASE35-A ¹	SRG	1,031.26	1,022.48	1,013.74	1,013.68	-17.6	-8.8	-0.1
ASE36-A ¹	SRG	1,024.61	1,014.22	Dry	Dry	--	--	--
ASE37-A ¹	SRG/BF	1,056.12	1,056.27	1,042.75	1,044.70	-11.4	-11.6	2.0
ASE38-A ¹	SRG/BF	--	1,056.65	1,043.28	1,045.12	--	-11.5	1.8
ASE39-A ¹	SRG/BF	1,056.14	1,055.90	--	--	--	--	--
ASE41-A ¹	SRG	--	1,050.59	--	--	--	--	--
ASE46-A ¹	SRG	--	1,049.45	--	--	--	--	--
ASE51-A ¹	SRG	--	1,054.05	--	--	--	--	--
ASE52-A ¹	SRG	--	1,056.07	1,043.48	1,045.18	--	-10.9	1.7
ASE53-A ¹	SRG	--	1,056.59	--	--	--	--	--
ASE54-A ¹	SRG	--	1,051.35	1,040.68	1,042.27	--	-9.1	1.6
ASE55-A ¹	SRG	--	1,046.73	Dry	Dry	--	--	--
ASE56-A ¹	SRG	--	1,050.64	--	--	--	--	--
ASE57-A ¹	SRG	--	1,051.79	--	--	--	--	--
ASE58-A ¹	SRG	--	1,049.58	1,038.81	1,040.47	--	-9.1	1.7
ASE59-A ¹	SRG	--	1,056.50	--	--	--	--	--
ASE60-A ¹	SRG	--	1,057.49	1,044.61	1,046.10	--	-11.4	1.5
ASE61-A ¹	SRG	--	1,057.95	1,045.11	1,046.69	--	-11.3	1.6
ASE62-A ¹	SRG	--	1,047.39	1,037.10	1,038.90	--	-8.5	1.8
ASE63-A ¹	SRG/BF	--	1,054.62	1,041.19	1,043.37	--	-11.3	2.2
ASE64-A ¹	SRG	--	1,049.41	1,032.97	1,036.64	--	-12.8	3.7
ASE65-A ¹	SRG	--	1,035.16	1,020.75	1,023.29	--	-11.9	2.5
ASE66-A ¹	SRG	--	1,052.46	--	--	--	--	--
ASE67-A ¹	SRG/BF	--	1,055.91	1,043.49	1,045.25	--	-10.7	1.8
ASE68-A ¹	SRG/BF	--	1,051.93	1,013.77	1,042.00	--	-9.9	28.2
ASE69-A ¹	SRG	--	1,054.16	1,043.45	1,044.72	--	-9.4	1.3
ASE70-A ¹	SRG	--	1,050.72	1,040.67	1,042.05	--	-8.7	1.4
ASE71-A ¹	SRG	--	1,023.95	1,016.97	1,016.81	--	-7.1	-0.2
ASE72-A ¹	SRG	--	1,022.86	--	Dry	--	--	--
ASE73-A ¹	SRG	--	1,023.14	1,007.45	1,010.13	--	-13.0	2.7
ASE75-A ¹	SRG	--	1,020.90	1,004.90	1,007.49	--	-13.4	2.6
ASE76-A ¹	SRG	--	1,015.48	1,001.11	1,002.88	--	-12.6	1.8
ASE77-A ¹	SRG	--	1,011.35	998.88	999.95	--	-11.4	1.1
ASE81-A ¹	SRG/CV	--	1,051.43	1,041.07	1,042.58	--	-8.9	1.5
ASE83-A ¹	SRG	--	1,027.72	1,010.61	1,014.16	--	-13.6	3.5
ASE84-A ¹	SRG	--	1,031.27	1,013.59	1,017.32	--	-13.9	3.7

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostrati- graphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
SRG Wells (cont'd)								
ASE85-A ¹	SRG	--	1,020.26	1,005.85	1,007.91	--	-12.4	2.1
ASE86-A ¹	SRG	--	1,018.25	1,004.91	1,006.66	--	-11.6	1.8
ASE87-A ¹	SRG	--	1,025.81	1,009.22	1,012.17	--	-13.6	2.9
ASE89-A ¹	SRG	--	1,048.08	1,029.91	1,034.08	--	-14.0	4.2
ASE90-A ¹	SRG	--	1,047.05	1,028.54	1,032.86	--	-14.2	4.3
ASE91-A ¹	SRG/BF	--	1,048.08	1033.15	1,036.46	--	-11.6	3.3
ASE92-A ¹	SRG/BF	--	1,048.48	1032.77	1,036.17	--	-12.3	3.4
ASE95-A ¹	SRG	--	1,037.00	1,017.72	1,021.77	--	-15.2	4.0
ASE96-A ¹	SRG	--	1,046.20	1,026.38	1,021.03	--	-25.2	-5.4
ASE97-A ¹	SRG	--	1,036.76	--	--	--	--	--
ASE98-A ¹	SRG	--	1,041.39	1,020.12	1,024.82	--	-16.6	4.7
ASE99-A ¹	SRG	--	1,043.34	1,021.61	1,026.60	--	-16.7	5.0
ASE100-A ¹	SRG	--	1,037.89	1,018.42	1,022.56	--	-15.3	4.1
ASE101-A ¹	SRG	--	1,041.34	1,020.21	1,024.73	--	-16.6	4.5
ASE102-A ¹	SRG	--	1,044.79	1,023.99	1,028.88	--	-15.9	4.9
ASE103-A ¹	SRG	--	1,036.07	1,017.24	1,021.18	--	-14.9	3.9
ASE105-A ¹	SRG	--	1,048.17	1,028.86	1,033.45	--	-14.7	4.6
ASE106-A ¹	SRG	--	1,046.11	1,025.63	1,030.54	--	-15.6	4.9
ASE107-A ¹	SRG	--	1,047.40	1,024.89	1,030.98	--	-16.4	6.1
ASE108-A ¹	SRG	--	1,047.13	1,034.26	1,036.87	--	-10.3	2.6
ASE109-A ¹	SRG	--	1,048.68	--	--	--	--	--
ASE110-A ¹	SRG	--	1,047.09	1,025.42	1,030.45	--	-16.6	5.0
ASE111-A ¹	SRG/BF	--	1,054.77	1,043.81	1,045.55	--	-9.2	1.7
ASE112-A ¹	SRG	--	1,048.18	1,029.14	1,032.93	--	-15.3	3.8
ASE113-A ¹	SRG/BF	--	1,048.70	1,026.35	1,031.54	--	-17.2	5.2
ASE114-A ¹	SRG/BF	--	1,048.11	1,026.30	1,031.57	--	-16.5	5.3
ASE115-A ¹	SRG/BF	--	1,057.54	1,044.10	1,045.82	--	-11.7	1.7
ASE116-A ¹	SRG	--	--	1,043.81	1,045.55	--	--	1.7
ASE118-A ¹	SRG	--	--	1,028.85	1,028.73	--	--	-0.1
ASE120 ¹	SRG/BF	--	--	--	--	--	--	--
ASE122-A ¹	SRG/BF	--	--	1,026.73	1,032.20	--	--	5.5
ASE123-A ¹	SRG/BF	--	--	1,027.02	1,032.46	--	--	5.4
ASE124-A ¹	SRG	--	--	1,018.38	1,022.42	--	--	4.0
ASE125-A ¹	SRG	--	--	1,015.62	1,019.31	--	--	3.7
ASE126-A ¹	SRG	--	--	1,017.43	1,021.34	--	--	3.9
ASE127-A ¹	SRG/BR	--	--	1,037.36	1,040.07	--	--	2.7
ASE128-A ¹	SRG	--	--	1,020.12	1,024.54	--	--	4.4
ASE129-A ¹	SRG	--	--	1,016.28	1,019.96	--	--	3.7
ASE130-A ¹	SRG/BF	--	--	1,035.76	1,038.56	--	--	2.8
ASE131-A ¹	SRG	--	--	--	1,016.63	--	--	--
BC03 ¹	SRG	1,054.90	1,051.19	1,040.61	1,042.25	-12.7	-8.9	1.6
BC06 ¹	SRG/CV	1,052.23	1,049.07	1,038.33	1,040.22	-12.0	-8.8	1.9
BC07-A ¹	SRG/BF	1,053.29	1,055.23	Dry	Dry	--	--	--
BC08-B ¹	SRG	1,048.21	1,046.66	--	--	--	--	--
BC09 ¹	SRG	1,034.25	1,026.15	1,031.31	Dry	--	--	--
BC10-A ¹	SRG	1,031.59	1,023.00	Dry	Dry	--	--	--
BC12 ¹	SRG	1,046.50	1,045.08	1,052.37	1,049.04	2.5	4.0	-3.3
BC16	SRG	1,054.81	1,050.14	1,040.16	1,041.52	-13.3	-8.6	1.4
BC18 ¹	SRG	1,039.18	Dry	--	--	--	--	--
BC18R ¹	SRG	--	--	1,017.04	1,021.03	--	--	4.0

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostratigraphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
SRG Wells (cont'd)								
BR05 ²	SRG	--	1,051.07	Dry	Dry	--	--	--
CRA01	SRG	1,024.48	1,012.15	1,002.42	1,002.48	-22.0	-9.7	0.1
DM503	BF	--	--	--	1,094.38	--	--	--
DM507-084 ²	SRG	1,056.88	1,052.25	--	--	--	--	--
DM510-070 ²	SRG	--	Dry	Dry	Dry	--	--	--
DM510-110 ²	SRG	1,031.88	1,020.96	1,008.66	1,010.15	-21.7	-10.8	1.5
DM511-065 ²	SRG	1,046.57	Dry	Dry	Dry	--	--	--
DM512-060 ²	SRG	--	--	Dry	Dry	--	--	--
DM512-090 ²	SRG	--	1,046.17	1,035.74	1,038.65	--	-7.5	2.9
DM513-070 ²	SRG	1,058.33	Dry	Dry	Dry	--	--	--
DM514-065 ²	SRG	1,044.16	--	Dry	Dry	--	--	--
DM515-065 ²	SRG	--	Dry	Dry	Dry	--	--	--
DM515-115 ²	SRG	1,026.80	1,015.31	1,005.65	1,006.73	-20.1	-8.6	1.1
DM516-065 ²	SRG	1,040.78	--	Dry	Dry	--	--	--
DM516-150 ²	SRG	1,027.92	1,016.32 ⁶	1,002.52	1,003.90	-24.0	-12.4	1.4
DM517-070 ²	SRG	--	--	Dry	Dry	--	--	--
DM517-125 ²	SRG	1,031.43	1,022.10 ⁶	1,006.79	1,009.20	-22.2	-12.9	2.4
DM518-OB1 ²	SRG/BF/BR	1,029.72	1,018.92	--	--	--	--	--
DW05	SRG	--	983.49	Dry	Dry	--	--	--
EW03	SRG/BF	1,053.25	1,048.01	1,037.98	1,039.50	-13.8	-8.5	1.5
EW06	SRG	1,019.41	1,006.30	992.60	993.55	-25.9	-12.8	0.9
EW07	SRG	1,023.95	1,007.20	997.08	997.55	-26.4	-9.7	0.5
EW12-078	SRG	--	--	--	--	--	--	--
EW12-093	SRG	1,020.38	--	--	--	--	--	--
EW12-128	SRG	1,020.39	--	--	--	--	--	--
EW13-118 ³	SRG	1,015.81	1,002.81	990.33	990.95	-24.9	-11.9	0.6
EW13-168 ³	SRG	--	--	990.43	990.87	--	--	0.4
EW19-S	SRG	1,009.25	996.91	Dry	Dry	--	--	--
EW20 ³	SRG	1,006.42	994.10	Dry	982.71	-23.7	-11.4	--
EW21 ³	SRG	1,011.25	998.57	Dry	Dry	--	--	--
EW22-S	SRG	1,013.88	1,000.98	989.71	989.82	-24.1	-11.2	0.1
EW23	SRG	1,019.95	1,007.81	--	--	--	--	--
EWM	SRG/BF	1,022.53 ⁵	992.56	972.51	973.51	-49.0	-19.1	1.0
EWN	SRG/BF	1,022.98 ⁵	996.98	970.18	947.58	-75.4	-49.4	-22.6
EWS	SRG/BF/BR	1,020.07 ⁵	996.49	952.37	961.36	-58.7	-35.1	9.0
EWSPZ1	SRG/BF	--	1,005.40	993.14	993.56	--	-11.8	0.4
FDMW07	SRG	1,029.14	--	--	--	--	--	--
MW01(HERTZ)	SRG	--	--	--	--	--	--	--
MW05	SRG	--	--	--	--	--	--	--
NW01	SRG	1,035.70	1,026.63	1,017.43	1,018.12	-17.6	-8.5	0.7
NW02	SRG	1,019.98	1,004.13	993.85	994.02	-26.0	-10.1	0.2
NW03	SRG	1,020.18	1,004.23	993.33	993.57	-26.6	-10.7	0.2
NW04-S	SRG	--	1,004.71	992.91	992.96	--	-11.8	0.1
NW05-S	SRG	--	1,004.98	994.87	993.59	--	-11.4	-1.3
NW06-S	SRG	--	1,005.10	991.29	991.94	--	-13.2	0.7
NW07-S	SRG	--	1,004.02	991.17	991.87	--	-12.2	0.7
NW07-M	SRG	--	1,003.97	991.02	991.48	--	-12.5	0.5
NW08-S	SRG	--	1,006.35	993.78	994.15	--	-12.2	0.4
NW09-M	SRG	--	1,006.87	993.00	994.27	--	-12.6	1.3
NW11-M	SRG	--	1,006.15	993.01	993.89	--	-12.3	0.9

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostrati- graphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
SRG Wells (cont'd)								
NW13-M	SRG	--	1,004.99	991.52	992.72	--	-12.3	1.2
NW14-M	SRG	--	1,005.23	991.12	992.91	--	-12.3	1.8
NW16-M	SRG	--	--	992.62	993.32	--	--	0.7
NW18-S	SRG	--	--	991.43	991.88	--	--	0.5
NW19-M	SRG	--	--	995.40	996.74	--	--	1.3
NW21-S	SRG	--	--	1,009.65	1,010.45	--	--	0.8
NW22-S	SRG	--	--	996.76	997.27	--	--	0.5
NW23-S	SRG	--	--	998.38	999.63	--	--	1.3
NW24-S	SRG	--	--	1,036.64	1,038.24	--	--	1.6
NW25-S	SRG	--	--	1,041.79	1,043.48	--	--	1.7
OU301-M ³	SRG	--	997.77	986.28	986.51	--	-11.3	0.2
OU302-M ³	SRG	--	997.20	985.39	985.87	--	-11.3	0.5
OU304-S ³	SRG	--	1,000.34	989.62	989.50	--	-10.8	-0.1
OU305-M ⁴	SRG	--	--	--	--	--	--	--
OU305-M2 ³	SRG/BF	--	990.85	979.77	980.21	--	-10.6	0.4
OU305-MR ³	SRG	--	990.99	979.75	980.17	--	-10.8	0.4
OU305-S ⁴	SRG	--	--	--	--	--	--	--
OU305-SR ³	SRG	--	991.10	979.79	980.26	--	-10.8	0.5
OU306-M ³	SRG	--	989.37	978.17	978.98	--	-10.4	0.8
OU307-M2 ³	SRG	--	993.82	982.76	982.61	--	-11.2	-0.1
OU307-S ³	SRG	--	993.56	982.44	982.31	--	-11.3	-0.1
OU308-M2 ³	SRG	--	982.97	971.54	971.55	--	-11.4	0.0
OU308-S ³	SRG	--	982.35	970.94	971.56	--	-10.8	0.6
OU309-M2 ³	SRG/BF	--	984.66	973.32	973.31	--	-11.4	0.0
OU309-S ³	SRG	--	984.40	973.45	973.27	--	-11.1	-0.2
OU310-M ³	SRG	--	978.53	966.79	967.70	--	-10.8	0.9
OU310-M2 ³	SRG	--	978.79	967.07	967.96	--	-10.8	0.9
OU310-SR ³	SRG	--	--	966.85	967.71	--	--	0.9
OU311-M ³	SRG	--	984.61	973.08	974.29	--	-10.3	1.2
OU311-M2 ³	SRG/BF	--	984.58	973.03	974.27	--	-10.3	1.2
OU311-S ³	SRG	--	984.72	973.17	974.34	--	-10.4	1.2
OU312-M	SRG	--	1,000.79	988.57	989.00	--	-11.8	0.4
OU313-M	SRG	--	1,001.03	989.42	989.60	--	-11.4	0.2
OU314-M	SRG	--	1,003.72	993.15	993.10	--	-10.6	0.0
OU316-M ³	SRG	--	--	968.08	968.76	--	--	0.7
OU316-S ³	SRG	--	--	968.11	968.82	--	--	0.7
OU317-S ³	SRG	--	--	981.00	981.75	--	--	0.8
OU319-M ³	SRG	--	--	988.92	989.53	--	--	0.6
OU320-S	SRG	--	--	993.59	994.80	--	--	1.2
OU320-M	SRG	--	--	993.37	994.64	--	--	1.3
PHXA03 ⁴	SRG/BR	--	1,016.90	--	--	--	--	--
PHXA04 ⁴	SRG	--	1,013.70	--	--	--	--	--
PHXA05 ⁴	SRG	--	1,013.20	--	--	--	--	--
PHXA06	SRG	--	1,010.01	996.78	997.94	--	-12.1	1.2
PL101-A ¹	SRG	1,056.07	1,056.74	--	--	--	--	--
PL102-A ¹	SRG	1,059.59	1,058.63	Dry	1,047.55	-12.0	-11.1	--
PL103-A ¹	SRG	1,054.00	1,050.47	1,039.77	1,041.59	-12.4	-8.9	1.8
PL104-A ¹	SRG	Dry	Dry	Dry	Dry	--	--	--
PL105-A ¹	SRG	1,049.37	1,047.37	Dry	Dry	--	--	--
PL201-A ¹	SRG	1,051.78	1,048.58	1,037.88	1,039.71	-12.1	-8.9	1.8

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostratigraphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
SRG Wells (cont'd)								
PL202-C ¹	SRG	1,031.87	1,022.89	1,007.43	1,009.57	-22.3	-13.3	2.1
PL202-S ¹	SRG	1,032.11	Dry	Dry	Dry	--	--	--
PL2101 ¹	SRG	1,054.98	1,051.67	1,040.42	1,040.32	-14.7	-11.4	-0.1
PL2102 ¹	SRG	1,055.12	1,051.58	1,041.01	1,042.63	-12.5	-8.9	1.6
PL2102-A ¹	SRG	--	--	--	--	--	--	--
PZ01-A	SRG	1,055.39	1,050.65	Dry	Dry	--	--	--
PZ01-S	SRG	1,020.35	1,003.46	993.74	993.92	-26.4	-9.5	0.2
PZ02-S	SRG	1,020.15	1,003.31	993.65	993.68	-26.5	-9.6	0.0
SCMW-1D ³	SRG	--	1,001.36	989.18	989.88	--	-11.5	0.7
TEW01	SRG	1,020.21	1,003.36	993.81	993.86	-26.4	-9.5	0.1
TT02 ³	SRG	1,009.06	997.02	--	--	--	--	--
TT05 ³	SRG	1,014.24	--	--	--	--	--	--
BF Wells								
ASE19-B ¹	BF/BR	1,055.75	--	1,041.30	1,043.07	-12.7	--	1.8
ASE22-B ¹	BF/CV/BR	1,034.09	1,026.47	1,010.28	1,013.60	-20.5	-12.9	3.3
ASE29-A ¹	BF/CV	1,035.90	1,032.93	Dry	Dry	--	--	--
ASE40-B ¹	BF	1,051.38	1,049.32	1,035.57	1,038.36	-13.0	-11.0	2.8
ASE41-B ¹	BF	1,052.99	1,050.67	1,038.81	1,040.28	-12.7	-10.4	1.5
ASE44-B ¹	BF	1,055.27	1,052.28	1,040.76	1,042.64	-12.6	-9.6	1.9
ASE45-B ¹	BF	1,054.83	1,052.14	1,040.14	1,042.17	-12.7	-10.0	2.0
ASE46-B ¹	BF	1,051.92	1,049.17	1,037.61	1,039.87	-12.0	-9.3	2.3
ASE48-B ¹	BF	1,055.85	1,052.98	1,041.35	1,043.21	-12.6	-9.8	1.9
ASE49-B ¹	BF	1,056.06	1,053.64	1,041.87	1,043.63	-12.4	-10.0	1.8
ASE72-B ¹	BF/CV/BR	--	1,022.86	1,008.18	1,010.22	--	-12.6	2.0
ASE73-B ¹	BF	--	1,023.20	1,007.48	1,010.20	--	-13.0	2.7
ASE76-B ¹	BF	--	1,015.22	1,000.85	1,002.64	--	-12.6	1.8
ASE77-B ¹	BF	--	1,010.64	998.03	999.12	--	-11.5	1.1
ASE78-B ¹	BF	--	1,009.77	996.63	997.83	--	-11.9	1.2
ASE83-B ¹	BF	--	1,027.41	1,010.61	1,014.11	--	-13.3	3.5
ASE85-B ¹	BF	--	1,020.16	1,005.83	1,007.83	--	-12.3	2.0
ASE88-B ¹	BF	--	1,011.36	996.94	998.52	--	-12.8	1.6
ASE120-B ¹	BF/BR	--	--	1,011.97	1,010.76	--	--	-1.2
BC01 ¹	BF	1,058.84	1,057.83	1,046.46	1,046.46	-12.4	-11.4	0.0
BC02 ¹	BF	1,056.08	1,056.53	1,042.98	1,045.01	-11.1	-11.5	2.0
BC04 ¹	BF	1,054.67	1,051.26	1,040.50	1,042.09	-12.6	-9.2	1.6
BC08-A ¹	BF	1,048.31	1,046.86	1,030.67	1,034.49	-13.8	-12.4	3.8
BC10-B ¹	BF	1,031.18	1,022.46	1,006.29	1,008.89	-22.3	-13.6	2.6
BC11-A ¹	BF/CV	1,029.76	1,019.52	1,004.61	1,006.66	-23.1	-12.9	2.0
BC11-B ¹	BF	1,029.20	1,018.47	1,003.88	1,005.80	-23.4	-12.7	1.9
BC13 ¹	BF	1,077.30	1,083.58	1,063.96	1,065.34	-12.0	-18.2	1.4
BC14 ¹	BF	1,080.02	1,084.28	1,064.99	1,065.99	-14.0	-18.3	1.0
BC15 ¹	BF	1,059.12	1,056.18	1,045.29	1,046.54	-12.6	-9.6	1.3
BC17 ¹	BF/CV	1,056.22	1,052.17	1,041.86	1,043.34	-12.9	-8.8	1.5
DM118 ²	BF	1,125.78	1,119.68	--	1,114.63	-11.1	-5.0	--
DM119-072 ²	BF	--	1,107.26	--	1,101.31	--	-6.0	--
DM119-098 ²	BF	--	1,107.38	--	1,101.17	--	-6.2	--
DM120 ²	BF	1,098.63	1,093.67	--	1,084.58	-14.1	-9.1	--
DM122-A ²	BF	1,085.24	1,084.45	--	Dry	--	--	--
DM122-B ²	BF	1,085.21	1,085.58	--	1,068.07	-17.1	-17.5	--
DM501-147 ²	BF	1,072.90	1,069.37	1,057.91	1,058.95	-14.0	-10.4	1.0

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostrati- graphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
BF Wells (cont'd)								
DM501-202 ²	BF	1,072.81	1,069.18	1,057.77	1,058.84	-14.0	-10.3	1.1
DM502-079 ²	BF	1,093.58	1,089.83	--	Dry	--	--	--
DM502-119 ²	BF	1,093.60	1,089.88	--	1,078.49	-15.1	-11.4	--
DM504 ²	BF/BR	1,076.67	1,074.17	1,061.34	1,061.96	-14.7	-12.2	0.6
DM506-100 ²	BF	1,064.19	1,062.41	1,051.65	1,052.50	-11.7	-9.9	0.8
DM506-185 ²	BF	1,064.23	1,062.55	1,051.53	1,052.57	-11.7	-10.0	1.0
DM508 ²	BF/CV	1,065.54	1,065.92	1,055.20	1,056.41	-9.1	-9.5	1.2
DM509 ²	BF	1,052.86	1,047.59	1,037.61	1,039.09	-13.8	-8.5	1.5
DM511-110 ²	BF	1,045.18	1,037.38	1,028.37	1,029.38	-15.8	-8.0	1.0
DM511-135 ²	BF	--	--	--	--	--	--	--
DM512-155 ²	BF	--	1,046.20	1,035.90	1,039.57	--	-6.6	3.7
DM513-145 ²	BF	1,058.22	1,053.23	1,042.16	1,043.56	-14.7	-9.7	1.4
DM513-195 ²	BF	1,058.29	1,053.76	1,042.77	1,044.02	-14.3	-9.7	1.3
DM515-210	BF	1,027.60	1,015.66	1,003.49	1,004.52	-23.1	-11.1	1.0
DM516-210 ²	BF	1,027.91	1,016.32 ⁶	1,002.60	1,003.98	-23.9	-12.3	1.4
EW02 ²	BF	1,075.59	1,074.37	1,061.66	1,062.28	-13.3	-12.1	0.6
EW12-180 ³	BF	1,020.00	--	--	--	--	--	--
EW12-227 ³	BF	1,020.03	--	--	--	--	--	--
EW12-239 ³	BF	1,020.14	--	--	--	--	--	--
EW13-228 ³	BF	1,016.90	1,005.15	992.25	992.83	-24.1	-12.3	0.6
EW13-268 ³	BF	1,016.95	1,005.79	992.95	993.50	-23.4	-12.3	0.5
EW13-300 ³	BF	1,017.12	--	--	--	--	--	--
EW19-D	BF	1,012.95	1,003.68	991.76	992.43	-20.5	-11.3	0.7
EW22-D	BF	1,017.58	1,008.38	996.51	996.94	-20.6	-11.4	0.4
NW04-D	BF	--	1,004.92	993.38	992.63	--	-12.3	-0.8
NW06-D	BF	--	1,005.12	992.34	991.90	--	-13.2	-0.4
NW07-D	BF	--	1,004.44	992.49	991.88	--	-12.6	-0.6
NW08-M	BF	--	1,006.23	993.23	993.58	--	-12.7	0.4
NW08-D	BF	--	1,007.92	996.33	995.83	--	-12.1	-0.5
NW09-D	BF	--	1,006.53	992.90	994.07	--	-12.5	1.2
NW09-D2	BF	--	1,006.40	993.32	993.95	--	-12.4	0.6
NW10-D	BF	--	1,007.21	993.28	994.56	--	-12.7	1.3
NW11-D	BF	--	1,006.00	992.78	993.79	--	-12.2	1.0
NW12-D	BF	--	1,018.00	1,007.13	1,006.98	--	-11.0	-0.1
NW13-D	BF	--	1,005.06	991.72	992.75	--	-12.3	1.0
NW14-D	BF	--	1,005.29	992.03	992.96	--	-12.3	0.9
NW16-D	BF	--	--	993.23	994.11	--	--	0.9
NW19-D	BF	--	--	995.38	996.59	--	--	1.2
NW22-D	BF	--	--	996.07	996.55	--	--	0.5
NW23-D	BF	--	--	997.25	998.51	--	--	1.3
NW24-D	BF	--	--	1,036.74	1,038.28	--	--	1.5
NW27-D ¹	BF	--	--	--	1,007.50	--	--	--
OU301-D ³	BF	--	1,005.80	994.94	995.61	--	-10.2	0.7
OU305-D ³	BF	--	--	--	--	--	--	--
OU305-DR ³	BF	--	995.21	983.81	984.55	--	-10.7	0.7
OU306-D ³	BF	--	992.37	980.72	981.66	--	-10.7	0.9
OU308-D ³	BF	--	984.58	972.91	973.61	--	-11.0	0.7
OU312-D	BF	--	1,005.00	992.52	993.26	--	-11.7	0.7
OU313-D	BF	--	1,003.36	991.90	992.04	--	-11.3	0.1
OU314-D	BF	--	1,012.48	1,001.16	1,001.83	--	-10.7	0.7

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostrati- graphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
BF Wells (cont'd)								
PL202-N ¹	BF	1,031.53	1,022.36	1,006.79	1,009.11	-22.4	-13.3	2.3
PL2103 ¹	BF	1,057.57	1,054.26	1,043.69	1,044.98	-12.6	-9.3	1.3
PZ01-B	BF	1,055.37	1,050.66	1,040.51	1,041.95	-13.4	-8.7	1.4
BR Wells								
ASE19-C ¹	BR	1,055.91	1,053.02	1,041.46	1,043.23	-12.7	-9.8	1.8
ASE20-B ¹	BR	1,054.68	1,051.77	1,040.17	1,042.01	-12.7	-9.8	1.8
ASE20-C ¹	BR	1,054.57	1,051.65	1,040.06	1,041.92	-12.6	-9.7	1.9
ASE21-C ¹	BR	1,060.25	1,058.75	1,048.53	1,049.27	-11.0	-9.5	0.7
ASE22-C ¹	BR	1,034.27	1,026.66	1,010.83	1,014.11	-20.2	-12.6	3.3
ASE24-C ¹	BR	1,052.29	1,048.53	1,038.12	1,040.08	-12.2	-8.5	2.0
ASE25-C ¹	BR	1,046.79	1,040.35	1,054.14	1,064.09	17.3	23.7	9.9
ASE42-C ¹	BR	1,039.47	1,035.46	Dry	Dry	--	--	--
ASE43-C ¹	BR	1,054.14	1,051.10	1,039.68	1,041.59	-12.6	-9.5	1.9
ASE50-C ¹	BR	1,056.10	1,053.68	1,042.15	1,043.81	-12.3	-9.9	1.7
ASE73-C ¹	BR	--	1,023.37	1,007.63	1,010.37	--	-13.0	2.7
ASE75-C ¹	BR	--	1,020.29	1,004.51	1,006.90	--	-13.4	2.4
ASE79-C ¹	BR	--	1,050.65	1,042.19	1,042.71	--	-7.9	0.5
ASE82-C ¹	BR	--	1,035.44	1,043.79	1,050.83	--	15.4	7.0
ASE83-C ¹	BR	--	1,027.00	1,010.32	1,013.79	--	-13.2	3.5
ASE84-C ¹	BR	--	1,030.93	1,013.59	1,017.05	--	-13.9	3.5
BC08-C ¹	BR	--	1,047.00	1,032.75	1,036.58	--	-10.4	3.8
BC10-C ¹	BR	--	1,022.09	1,005.93	1,008.56	--	-13.5	2.6
BR01 ²	BR	--	1,043.84	1,034.92	1,036.35	--	-7.5	1.4
BR02 ²	BR	--	1,044.61	1,031.35	1,033.49	--	-11.1	2.1
BR03 ²	BR	--	--	--	--	--	--	--
BR04 ²	BR	--	1,050.35	1,055.89	1,048.39	--	-2.0	-7.5
DM119-137 ²	BR	--	1,107.43	--	1,101.18	--	-6.3	--
DM119-204 ²	BR	--	1,109.33	--	1,105.85	--	-3.5	--
DM119-244 ²	BR	--	1,111.54	--	1,106.40	--	-5.1	--
DM119-284 ²	BR	--	1,111.55	--	1,106.41	--	-5.1	--
DM501-267 ²	BR	1,073.10	1,069.97	1,078.98	1,059.23	-13.9	-10.7	-19.8
DM501-331 ²	BR	1,074.12	1,071.19	1,059.32	1,060.27	-13.8	-10.9	1.0
DM501-387 ²	BR	1,075.38	1,072.72	1,060.54	1,061.37	-14.0	-11.4	0.8
DM502-161 ²	BR	1,094.63	1,091.19	--	1,079.88	-14.8	-11.3	--
DM502-240 ²	BR	1,094.94	1,091.63	--	1,080.45	-14.5	-11.2	--
DM502-335 ²	BR	1,095.01	1,091.99	--	1,090.11	-4.9	-1.9	--
DM506-240 ²	BR	1,065.07	1,062.55	1,052.36	1,053.17	-11.9	-9.4	0.8
DM506-305 ²	BR	1,065.80	1,063.94	1,052.71	1,053.68	-12.1	-10.3	1.0
DM506-375 ²	BR	1,066.86	1,065.06	1,053.62	1,053.54	-13.3	-11.5	-0.1
DM507-240 ²	BR	1,056.89	1,052.16	--	--	--	--	--
DM507-280 ²	BR	1,056.83	1,052.06	--	--	--	--	--
DM507-315 ²	BR	1,056.82	1,052.11	--	--	--	--	--
DM510-175 ²	BR	1,031.87	1,021.22	1,009.06	1,010.50	-21.4	-10.7	1.4
DM510-235 ²	BR	1,032.27	1,021.62	1,009.68	1,011.08	-21.2	-10.5	1.4
DM510-290 ²	BR	1,032.35	1,021.94	1,010.12	1,011.50	-20.8	-10.4	1.4
DM511-165 ²	BR	1,045.25	1,037.47	1,028.26	1,029.33	-15.9	-8.1	1.1
DM511-225 ²	BR	1,045.66	1,037.94	1,028.67	1,029.80	-15.9	-8.1	1.1
DM511-290 ²	BR	1,045.61	1,037.91	1,028.69	1,029.81	-15.8	-8.1	1.1
DM512-225 ²	BR	--	1,046.84	1,036.49	1,046.40	--	-0.4	9.9
DM512-295 ²	BR	--	1,047.09	1,036.57	1,039.54	--	-7.5	3.0

Table 3.3

Groundwater Elevations - September 2001, 2006, 2016 and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Hydrostratigraphic Unit	Groundwater Elevation (ft AMSL)				Change in Groundwater Elevation (ft)		
		September 2001	September 2006	September 2016	September 2017	September 2001 to September 2017	September 2006 to September 2017	September 2016 to September 2017
BR Wells (cont'd)								
DM512-345 ²	BR	--	1,048.12	1,037.62	1,049.26	--	1.1	11.6
DM513-240 ²	BR	1,058.88	1,053.68	1,042.68	1,044.11	-14.8	-9.6	1.4
DM513-280 ²	BR	1,058.65	1,053.60	1,042.54	1,043.92	-14.7	-9.7	1.4
DM513-315 ²	BR	1,058.57	1,053.66	1,042.15	1,043.70	-14.9	-10.0	1.5
DM514-105 ²	BR	1,030.69	1,020.18 ⁶	1,007.07	1,008.34	-22.4	-11.8	1.3
DM514-180 ²	BR	1,031.15	1,020.38 ⁶	1,007.11	1,008.65	-22.5	-11.7	1.5
DM514-240 ²	BR	1,031.11	--	1,007.22	1,008.74	-22.4	--	1.5
DM514-295 ²	BR	1,031.11	--	1,007.22	1,008.88	-22.2	--	1.7
DM515-265 ²	BR	1,028.04	1,015.62	1,003.10	1,004.31	-23.7	-11.3	1.2
DM515-320 ²	BR	1,026.87	1,015.71	1,002.95	1,004.36	-22.5	-11.4	1.4
DM515-380 ²	BR	1,027.80	1,015.65	1,003.05	1,004.01	-23.8	-11.6	1.0
DM516-295 ²	BR	1,028.02	1,016.26 ⁶	1,002.60	1,004.43	-23.6	-11.8	1.8
DM516-335 ²	BR	--	--	1,002.55	1,004.24	--	--	1.7
DM516-390 ²	BR	--	--	1,002.75	1,004.25	--	--	1.5
DM517-235 ²	BR	1,031.27	1,021.56 ⁶	1,006.57	1,008.83	-22.4	-12.7	2.3
DM517-315 ²	BR	1,030.98	--	1,006.43	--	--	--	--
DM517-365 ²	BR	1,031.20	--	--	1,008.76	-22.4	--	--
PL103-C ¹	BR	--	1,049.95	1,039.34	1,041.05	--	-8.9	1.7
PZ01-D	BR	1,020.39	1,003.45	993.70	993.89	-26.5	-9.6	0.2
PZ02-D	BR	1,020.13	1,003.35	993.68	993.70	-26.4	-9.6	0.0
CV Wells								
ASE23-B ¹	CV/BR	1,031.52	1,022.54	1,006.74	1,009.14	-22.4	-13.4	2.4
ASE43-B ¹	CV/BR	1,054.21	1,051.38	1,039.74	1,041.67	-12.5	-9.7	1.9
ASE47-B ¹	CV	1,031.49	1,022.68	1,006.70	1,009.49	-22.0	-13.2	2.8
ASE71-B ¹	CV	--	1,023.98	1,017.01	1,013.69	--	-10.3	-3.3
ASE75-B ¹	CV/BR	--	1,020.35	1,004.65	1,006.96	--	-13.4	2.3
DM505 ²	CV/BR	1,068.69	1,063.28	1,051.12	1,052.36	-16.3	-10.9	1.2
DM507-188 ²	CV	1,057.02	1,052.21	--	--	--	--	--
DM517-185 ²	CV	1,031.37	1,022.06 ⁶	1,006.75	1,009.07	-22.3	-13.0	2.3
NW15-S	CV	--	--	996.27	Dry	--	--	--
NW17-S	CV	--	--	992.17	992.45	--	--	0.3
NW18-M	CV	--	--	991.58	991.92	--	--	0.3

Notes:

ft - feet

A negative value indicates a decrease in water level (e.g., - 6.71)

AMSL - above mean sea level

A positive value indicates an increase in water level (e.g., 6.71)

"--" - No data

¹ Data collected by CH2MHILL on behalf of Honeywell

SRG - Salt River Gravel

² Data collected by Clear Creek Associates on behalf of Freescale

BF - Basin Fill

³ Data collected by ERM on behalf of OU3 Working Parties

BR - Bedrock

⁴ Data collected by Arcadis Inc. on behalf of City of Phoenix

CV - Colluvium

⁵ Water level measured 07/09/01⁶ Data collected by LFR, Inc. on behalf of ADEQ

Table 3.4

Groundwater Sample Key - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample ID *	Well ID	Date	Comments
GW-090617-PG-01	NW04-D	09/06/17	Rinse Blank
GW-090617-PG-02	NW04-D	09/06/17	
GW-090717-PG-03	NW09-M	09/07/17	
GW-090817-PG-04	NW02	09/08/17	
GW-090817-PG-05	NW02	09/08/17	Duplicate
GW-090817-PG-06	CRA01	09/08/17	Field Blank
GW-090817-PG-07	CRA01	09/08/17	
GW-091117-PG-08	NW09-D2	09/11/17	
GW-091117-PG-09	NW08-D	09/11/17	Grab Sample (Pump)
GW-091117-PG-10	NW04-S	09/11/17	Grab Sample (Bailer)
GW-091117-PG-11	NW07-S	09/11/17	Grab Sample (Bailer)
GW-091217-PG-12	NW05-S	09/12/17	
GW-091217-PG-13	NW07-D	09/12/17	
GW-091217-PG-14	NW19-M	09/12/17	
GW-091217-PG-15	NW19-M	09/12/17	Duplicate
GW-091317-PG-16	NW07-M	09/13/17	Grab Sample (Pump)
GW-091317-PG-17	NW09-D	09/13/17	
GW-091317-PG-18	NW21-S	09/13/17	Rinse Blank
GW-091317-PG-19	NW21-S	09/13/17	
GW-091417-PG-20	NW10-D	09/14/17	Rinse Blank
GW-091417-PG-21	NW10-D	09/14/17	
GW-091417-PG-22	NW23-S	09/14/17	
GW-091417-PG-23	NW01	09/14/17	
GW-091417-PG-24	NW25-S	09/14/17	
GW-091417-PG-25	NW25-S	09/14/17	Duplicate
GW-091517-PG-26	NW11-M	09/15/17	
GW-091817-PG-27	NW23-D	09/18/17	Field Blank
GW-091817-PG-28	NW23-D	09/18/17	
GW-091817-PG-29	NW08-S	09/18/17	Grab Sample (Bailer)
GW-091917-PG-30	NW22-D	09/19/17	MS/MSD
GW-091917-PG-31	NW11-D	09/19/17	Grab Sample (Pump)
GW-091917-PG-32	NW06-D	09/19/17	
GW-091917-PG-33	NW18-S	09/19/17	Rinse Blank
GW-091917-PG-34	NW18-S	09/19/17	
GW-091917-PG-35	NW06-S	09/19/17	Grab Sample (Bailer)
GW-092017-PG-36	NW19-D	09/20/17	
GW-092017-PG-37	NW22-S	09/20/17	
GW-092017-PG-38	NW08-M	09/21/17	Grab Sample (Pump)
GW-092117-PG-39	NW03	09/21/17	Field Blank
GW-092117-PG-40	NW03	09/21/17	
GW-092117-PG-41	NW17-S	09/21/17	MS/MSD

Table 3.4

Groundwater Sample Key - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample ID *	Well ID	Date	Comments
GW-092117-PG-42	NW24-S	09/21/17	
GW-092117-PG-43	NW24-S	09/21/17	Duplicate
GW-092117-PG-44	EW03	09/21/17	
GW-092217-PG-45	NW24-D	09/22/17	Rinse Blank
GW-092217-PG-46	NW24-D	09/22/17	
GW-092217-PG-47	DM509	09/22/17	Field Blank
GW-092217-PG-48	DM509	09/22/17	
GW-092517-PG-49	NW13-M	09/25/17	Rinse Blank (rental 2")
GW-092517-PG-50	NW13-M	09/25/17	
GW-092517-PG-51	NW14-M	09/25/17	
GW-092617-PG-52	NW13-D	09/26/17	
GW-092617-PG-53	EW07	09/26/17	Rinse Blank (rental 2")
GW-092617-PG-54	EW07	09/26/17	
GW-092617-PG-55	EW06	09/26/17	
GW-092717-PG-56	NW14-D	09/27/17	
GW-092717-PG-57	BC-16	09/27/17	
GW-092717-PG-58	NW16-D	09/27/17	
GW-092717-PG-59	NW16-D	09/27/17	Duplicate
GW-092817-PG-60	NW16-M	09/28/17	MS/MSD
GW-092817-PG-61	PZ01-B	09/28/17	
GW-100317-PG-62	NW12-D	10/03/17	
GW-100417-PG-63	NW03	10/04/17	
GW-100517-PG-64	EW22-S	10/05/17	Grab Sample (Bailer)
GW-101617-PG-65	EW22-D	10/16/17	Rinse Blank
GW-101617-PG-66	EW22-D	10/16/17	

Notes:

MS/MSD - Matrix Spike/ Matrix Spike Duplicate Sample

* Samples collected by GHD.

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
BC-16	GW-092816-PG-64	SRG	09/28/16	80	20	6.81	81.6	1,666
						6.87	80.5	1,654
CRA-01	GW-090817-PG-07	SRG	09/08/17	124	50	7.69	81.5	1,797
Field Blank	GW-090817-PG-06		09/08/17			7.36	80.3	2,009
						7.25	80.4	2,033
						7.26	80.6	2,042
						7.23	81.7	2,025
DM509	GW-092217-PG-48	BF	09/22/17	165	200	7.22	77.8	1,483
Field Blank	GW-092217-PG-47		09/22/17			7.02	77.9	1,499
						7.25	78.8	1,502
						7.34	78.2	1,513
						7.40	78.5	1,507
EW03	GW-092117-PG-44	SRG/BF	09/21/17	97	70	7.39	80.8	1,589
						7.19	80.5	1,530
						7.32	79.6	1,630
						7.28	79.8	1,542
						7.58	79.1	1,540
EW06	GW-092617-PG-55	SRG	09/26/17	108	25	6.93	82.8	1,323
						6.99	81.7	1,315
						6.93	81.7	1,313
						7.00	80.9	1,324
						7.01	80.8	1,326
EW07	GW-092617-PG-54	SRG	09/22/17	127	50	7.20	77.6	1,740
Rinse Blank	GW-092617-PG-53					7.15	79.2	1,772
						7.07	79.3	1,775
						7.05	79.3	1,798
						7.06	79.2	1,780
EW22-D	GW-101617-PG-66	BF	10/16/17	420	750	6.60	83.4	1,836
Rinse Blank	GW-101617-PG-65					7.14	82.1	1,874
						7.02	83.5	1,891
						7.19	83.1	1,899
						7.23	82.2	1,882
EW22-S	GW-100517-PG-64	SRG	10/05/17	10	10	7.11	83.0	2,173
						7.05	82.3	2,152
						7.07	82.2	2,147
						7.06	82.4	2,130
						7.04	82.7	2,124

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
NW01	GW-091417-PG-23	SRG	09/14/17	105	40	7.04	81.6	2,209
						7.07	79.9	2,241
						7.12	79.3	2,235
						7.12	78.6	2,236
						7.13	78.5	2,238
NW02	GW-090817-PG-04 Duplicate	SRG	09/08/17	205	170	7.33	77.6	2,024
						7.28	77.9	2,072
						7.26	77.9	2,081
						7.27	78.1	2,080
						7.22	78.6	2,088
NW03	GW-092117-PG-40 Field Blank Resample	SRG	09/21/17	140	80	7.19	79.1	1,376
						7.30	78.6	1,391
						7.20	78.6	1,394
						7.11	78.9	1,385
						7.32	78.2	1,400
NW04-S	GW-091117-PG-10 <i>Well purged dry @ 20 gallons</i>	SRG	09/11/17	128	20	8.21	82.2	1,771
						8.35	83.0	1,765
NW04-D	GW-090617-PG-02 GW-090617-PG-01	BF	09/06/17	195	200	7.03	84.0	3,309
						7.05	81.3	3,304
						6.98	81.7	3,323
						7.07	81.3	3,434
						6.65	81.5	3,698
NW05-S	GW-091217-PG-12	SRG	09/12/17	126	50	8.07	81.4	2,003
						7.33	80.9	2,109
						7.03	81.5	2,309
						6.82	82.2	2,326
						8.76	81.3	2,281
NW06-S	GW-091917-PG-35 <i>Well dry @ 20 gallons</i>	SRG	09/19/17	126	20	8.24	83.6	1,105
						7.34	80.7	1,294
NW06-D	GW-091917-PG-32	BF	09/19/17	190	200	7.34	82.7	1,700
						7.24	71.4	1,671
						7.28	80.5	1,694
						7.24	81.0	1,679
						7.17	79.7	1,651
NW07-M	GW-091317-PG-16 <i>Well purged dry @ 75 gallons</i>	SRG	09/13/17	190	75	9.02	85.9	1,183
						7.40	80.7	1,448

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
NW07-S	GW-091117-PG-11 <i>Well purged dry @ 25 gallons</i>	SRG	09/11/17	128	25	7.19	83.9	1,270
						7.13	85.8	1,238
NW07-D	GW-091217-PG-13	BF	09/12/17	225	270	8.20	81.5	1,387
						7.67	80.4	1,410
						7.46	80.6	1,423
						7.51	81.0	1,443
						7.45	80.6	1,419
NW08-M	GW-092017-PG-38 <i>Well purged dry @ 80 gallons</i>	BF	09/21/17	193	80	8.84	83.0	1,181
						8.69	84.4	1,161
						7.62	77.6	1,352
NW08-S	GW-091817-PG-29 <i>Well purged dry @ 40 gallons</i>	SRG	09/18/17	130	40	8.93	83.6	1,322
						8.80	82.8	1,118
						7.64	79.4	1,708
NW08-D	GW-091117-PG-09 <i>Well purged dry @ 110 gallons</i>	BF	09/11/17	235	110	8.27	80.4	2,058
						8.56	80.1	2,039
						7.32	82.7	2,446
NW09-M	GW-090717-PG-03	SRG	09/07/17	180	175	7.55	82.8	1,441
						7.26	83.8	1,495
						7.29	83.4	1,495
						7.33	82.9	1,487
						7.33	83.4	1,475
NW09-D	GW-091317-PG-17	BF	09/13/17	220	50	7.69	81.5	1,797
						7.36	80.3	2,009
						7.25	80.4	2,033
						7.26	80.6	2,042
						7.23	81.7	2,005
NW09-D2	GW-091117-PG-08	BF	09/11/17	250	300	7.35	79.4	1,458
						7.31	79.8	1,382
						7.29	80.3	1,362
						7.35	81.6	1,390
						7.30	80.6	1,380
NW10-D	GW-091417-PG-21 Rinse Blank GW-091417-PG-20	BF	09/14/17 09/14/17	220	250	7.54	78.8	1,281
						7.51	78.8	1,231
						7.37	78.9	1,260
						7.32	79.0	1,266
						7.30	78.6	1,273

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
NW11-M	GW-091517-PG-26	SRG	09/15/17	183	180	9.50	78.2	1,263
						8.60	78.9	1,427
						8.30	79.1	1,490
						8.24	79.2	1,521
						8.32	79.5	1,413
NW11-D <i>Well purged dry @ 120 gallons</i>	GW-091917-PG-31	BF	09/19/17	220	120	8.04	78.3	1,263
						7.83	80.6	1,320
						7.64	80.6	1,209
NW12-D	GW-100317-PG-62	BF	10/03/17	220	450	6.28	79.1	3,724
						6.44	80.5	3,605
						6.48	82.2	3,611
						6.6	81.9	3,496
NW13-M Rinse Blank	GW-092517-PG-50	BF	09/25/17	185	50	7.24	78.9	1,138
	GW-092517-PG-49		09/25/17			7.21	79.7	1,133
						7.18	79.8	1,138
						7.16	79.9	1,139
						7.21	80.4	1,124
NW13-D	GW-092617-PG-52	BF	09/26/17	225	52	7.52	76.0	1,197
						7.36	77.9	1,169
						7.38	77.7	1,170
						7.34	77.9	1,168
NW14-M	GW-092517-PG-51	BF	09/25/17	185	50	7.10	81.4	1,222
						7.16	80.9	1,232
						7.11	80.9	1,221
						7.14	81.2	1,217
						7.15	80.9	1,218
NW14-D	GW-092717-PG-56	BF	09/27/17	225	75	7.35	78.1	1,182
						7.34	78.8	1,176
						7.31	79.5	1,181
						7.32	79.4	1,183
						7.41	79.6	1,179
NW16-M (MS/MSD)	GW-092817-PG-60	BF	09/28/17	171	60	9.01	81.5	1,340
						8.71	81.4	1,377
						8.26	81.7	1,411
						8.27	81.4	1,412
						7.62	81.3	1,422

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
NW16-D Duplicate	GW-092717-PG-58	BF	09/27/17	226	65	7.25	81.3	1,622
	GW-092717-PG-59		09/27/17			7.27	80.1	1,626
						7.26	80.0	1,627
						7.26	79.7	1,627
						7.36	79.0	1,615
NW17-S (MS/MSD)	GW-092117-PG-41	Colluvium	09/21/17	140	90	7.16	79.2	2,047
						7.20	78.9	2,100
						7.22	79.0	2,096
						7.19	78.8	2,103
						7.23	78.6	2,090
NW18-S Rinse Blank	GW-091917-PG-34	SRG	09/19/17	125	55	7.30	83.8	1,353
	GW-091917-PG-27		09/19/17			7.23	82.9	1,318
						7.28	81.7	1,330
						7.26	81.1	1,338
						7.34	81.0	1,332
NW19-M Duplicate	GW-091217-PG-14	BF	09/12/17	180	160	7.30	84.6	1,424
	GW-091217-PG-15		09/12/17			7.34	82.4	1,425
						7.33	82.3	1,422
						7.33	81.3	1,422
						7.36	81.5	1,426
NW19-D	GW-092017-PG-36	BF	09/20/17	215	225	7.70	78.3	1,150
						7.53	78.7	1,182
						7.47	78.5	1,186
						7.40	78.8	1,184
						7.45	78.3	1,185
NW21-S Rinse Blank	GW-091317-PG-19	SRG	09/13/17	103	20	7.59	99.3	1,689
	GW-091317-PG-18		09/13/17			7.45	102.2	1,694
						7.53	98.4	1,694
						7.00	92.7	2,221
						6.99	85.3	2,232
NW22-D	GW-091917-PG-30	BF	09/19/17	195	185	7.52	76.4	1,334
						7.50	76.5	1,364
						7.48	76.6	1,385
						7.46	76.6	1,381
						7.52	76.5	1,375
NW22-S	GW-092017-PG-37	SRG	09/20/17	127	60	7.10	84.6	1,744
						7.20	81.5	1,766
						7.30	80.3	1,769
						7.26	80.7	1,765
						7.29	79.8	1,790

Table 3.5

Summary of Monitor Well Development Area - September and October 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	Sample ID	Hydrogeologic Unit Sampled	Date Purged/ Sampled	Pump Inlet Depth (ft below TOC)	Total Purged Volume (Gallons)	pH (s.u.)	Temperature (°F)	Conductivity (µs/cm)
NW23-D Field Blank	GW-091817-PG-29	BF	09/18/17	185	225	7.38	77.8	1,503
	GW-091817-PG-28		09/18/17			7.19	78.8	1,510
						7.32	78.1	1,510
						7.28	78.8	1,536
						7.30	78.8	1,510
NW23-S	GW-091417-PG-22	SRG	09/14/17	127	60	7.02	83.9	15
						6.92	83.1	1,511
						6.97	82.8	1,505
						6.97	82.1	1,501
						6.98	81.5	1,511
NW24-D Rinse Blank	GW-092217-PG-46	BF	09/22/17	152	150	7.40	76.2	1,673
	GW-092217-PG-45		09/22/17			7.13	76.5	1,693
						7.20	76.3	1,706
						7.23	76.2	1,698
						7.20	75.9	1,705
NW24-S	GW-092117-PG-42	SRG	09/21/17	94	50	7.45	81.6	1,860
	GW-092117-PG-43		09/21/17			7.40	80.9	1,815
						7.35	79.9	1,825
						7.44	79.9	1,800
						7.40	79.8	1,806
PZ01-B	GW-092817-PG-61	BF	09/28/17	123	30	7.23	81.7	1,881
						7.22	80.2	1,886
						7.21	79.5	1,887
						7.27	79.1	1,890
						7.24	79.2	1,887

Notes:

ft - feet

TOC - top of casing

s.u. - standard unit

°F - degrees Fahrenheit

µs/cm - microsiemens per centimeter

BF - Basin Fill

SRG - Salt River Gravels

MS/MSD - Matrix Spike/Matrix Spike Duplicate

"- " - Not measured

Table 3.6

Vertical and Horizontal Hydraulic Gradients for 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

		Monitoring Date	9/5/2001		9/5/2006		9/1/2016		3/1/2017-3/9/2017		5/19/2017-5/23/2017		9/4/2017-10/26/2017	
Well ID	Hydro-stratigraphic Unit	Reference Elevation (ft. AMSL)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)
ASE76-A	SRG	1,105.42	-	-	1,015.48	NA	1,001.11	NA	1,001.07	NA	-	-	1,002.88	NA
ASE76-B	BF	1,105.34	-	-	1,015.22	-2.6E-03	1,000.85	-2.6E-03	1,000.79	-2.8E-03	-	-	1,002.64	-2.4E-03
ASE77-A	SRG	1,101.86	-	-	1,011.35	NA	998.88	NA	999.84	NA	-	-	999.95	NA
ASE77-B	BF	1,101.76	-	-	1,010.64	-6.2E-03	998.03	-7.4E-03	998.94	-9.0E-03	-	-	999.12	-8.3E-03
EW13-118	SRG	1,092.71	1,015.81	NA	1,002.81	NA	990.33	NA	-	-	990.61	NA	990.95	NA
EW13-168	SRG	1,092.71	1,015.74	-1.4E-03	-	-	990.43	2.0E-03	-	-	990.61	0.0E+00	990.87	-1.6E-03
EW13-228	BF	1,092.71	1,016.90	1.9E-02	1,005.15	NA	992.25	3.0E-02	-	-	992.84	3.7E-02	992.83	3.3E-02
EW13-268	BF	1,092.71	1,016.95	1.3E-03	1,005.79	1.6E-02	992.95	1.8E-02	-	-	993.77	2.3E-02	993.50	1.7E-02
EW13-300	BF	1,092.71	1,017.12	5.3E-03	-	-	-	-	-	-	993.95	4.5E-03	-	-
EW22-S	SRG	1,095.72	1,013.88	NA	1,000.98	NA	989.71	NA	989.47	NA	990.22	NA	989.82	NA
EW22-D	BF	1,095.75	1,017.57	1.2E-02	1,008.38	2.3E-02	996.51	2.1E-02	998.90	9.4E-02	998.85	8.6E-02	996.94	7.1E-02
NW04-S	SRG	1,099.96	-	-	1,004.71	NA	992.91	NA	994.11	NA	993.26	NA	992.96	NA
NW04-D	BF	1,099.92	-	-	1,004.92	2.9E-03	993.38	6.4E-03	993.13	-9.8E-03	992.93	-3.3E-03	992.63	-3.3E-03
NW06-S	SRG	1,096.82	-	-	1,005.02	NA	991.29	NA	992.14	NA	992.29	NA	991.94	NA
NW06-D	BF	1,096.92	-	-	1,005.20	2.5E-03	992.34	1.5E-02	991.88	-2.6E-03	991.93	-3.6E-03	991.90	-4.0E-04
NW07-S	SRG	1,094.19	-	-	1,004.02	NA	991.17	NA	991.07	NA	992.27	NA	991.87	NA
NW07-M	SRG	1,093.94	-	-	1,003.97	-6.2E-04	991.02	-2.1E-03	990.29	-1.1E-02	991.59	-9.7E-03	991.48	-5.6E-03
NW07-D	BF	1,094.21	-	-	1,004.44	1.4E-02	992.49	4.2E-02	991.98	4.8E-02	992.78	3.4E-02	991.88	1.1E-02
NW08-S	SRG	1,098.45	-	-	1,006.35	NA	993.78	NA	996.54	NA	994.29	NA	994.15	NA
NW08-M	BF	1,098.65	-	-	1,006.23	-2.0E-03	993.23	-1.2E-02	995.15	-2.0E-02	995.55	1.8E-02	993.58	-8.1E-03
NW08-D	BF	1,098.72	-	-	1,007.92	3.5E-02	996.33	6.3E-02	998.13	8.5E-02	997.98	6.9E-02	995.83	6.4E-02
EW06	SRG	1,097.75	1,019.41	-	1,006.30	NA	992.60	NA	993.05	NA	993.95	NA	993.55	NA
NW11-M	SRG	1,097.59	-	-	1,006.15	-1.1E+02	993.01	5.0E-03	993.24	2.7E-03	994.24	4.1E-03	993.89	4.9E-03
NW11-D	BF	1,097.69	-	-	1,006.00	-4.1E-03	992.78	-6.2E-03	993.34	2.9E-03	994.19	-1.4E-03	993.79	-2.9E-03
NW09-M	SRG	1,099.58	-	-	1,006.87	NA	993.00	NA	993.07	NA	994.67	NA	994.27	NA
NW09-D	BF	1,099.30	-	-	1,006.15	-1.8E-02	992.90	-2.5E-03	992.93	-2.0E-03	994.58	-1.3E-03	994.07	-2.9E-03
NW09-D2	BF	1,099.42	-	-	1,006.00	-5.0E-03	993.32	1.4E-02	992.70	-6.6E-03	994.35	-6.6E-03	993.95	-3.4E-03
NW13-M	SRG	1,096.67	-	-	1,004.99	NA	991.52	NA	991.65	NA	993.30	NA	992.72	NA
NW13-D	BF	1,096.61	-	-	1,005.06	1.7E-03	991.72	5.0E-03	991.66	1.0E-04	993.31	1.0E-04	992.75	3.0E-04
NW14-M	SRG	1,096.11	-	-	1,005.23	NA	991.12	NA	992.09	NA	993.36	NA	992.91	NA
NW14-D	BF	1,096.12	-	-	1,005.29	1.5E-03	992.03	2.3E-02	992.14	5.0E-04	993.39	3.0E-04	992.96	5.0E-04
NW16-M	SRG	1,097.92	-	-	-	-	992.62	NA	993.41	NA	993.67	NA	993.32	NA
NW16-D	BF	1,097.96	-	-	-	-	993.23	9.4E-03	994.91	2.3E-02	994.46	1.2E-02	994.11	1.2E-02

Table 3.6

Vertical and Horizontal Hydraulic Gradients for 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Monitoring Date		9/5/2001			9/5/2006		9/1/2016		3/1/2017-3/9/2017		5/19/2017-5/23/2017		9/4/2017-10/26/2017	
Well ID	Hydro-stratigraphic Unit	Reference Elevation (ft. AMSL)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)	Groundwater Elevation (ft. AMSL)	Vertical Gradient (ft/ft)
NW18-S	SRG	1,094.78	-	-	-	-	991.43	NA	991.88	NA	992.23	NA	991.88	NA
NW18-M	Colluvium	1,094.92	-	-	-	-	991.58	2.1E-03	991.92	5.7E-04	992.32	1.3E-03	991.92	5.7E-04
NW19-M	SRG	1,100.50	-	-	-	-	995.40	NA	995.34	NA	997.09	NA	996.74	NA
NW19-D	BF	1,100.69	-	-	-	-	995.38	-5.7E-04	995.28	-6.0E-04	997.05	-4.0E-04	996.59	-1.5E-03
NW22-S	SRG	1,099.36	-	-	-	-	996.76	NA	999.37	NA	997.26	NA	997.27	NA
NW22-D	BF	1,099.67	-	-	-	-	996.07	-1.1E-02	999.17	-2.0E-03	996.61	-6.5E-03	996.55	-7.2E-03
NW23-S	SRG	1,101.26	-	-	-	-	998.38	NA	998.69	NA	999.85	NA	999.63	NA
NW23-D	BF	1,101.13	-	-	-	-	997.25	-1.3E-02	997.71	-9.8E-03	998.81	-1.0E-02	998.51	-1.1E-02
NW24-S	SRG	1,116.54	-	-	-	-	1,036.64	NA	1,038.18	NA	1,038.09	NA	1,038.24	NA
NW24-D	BF	1,116.59	-	-	-	-	1,036.74	1.7E-03	1,038.24	6.0E-04	1,038.14	5.0E-04	1,038.28	4.0E-04
OU312-M	SRG	1,090.79	-	-	1.0E+03	NA	988.57	NA	988.28	NA	989.59	NA	989.00	NA
OU312-D	BF	1,090.77	-	-	1,005.00	4.3E-02	992.52	4.0E-02	994.52	6.2E-02	994.67	5.1E-02	993.26	4.3E-02
OU313-M	SRG	1,095.75	-	-	1,001.03	NA	989.42	NA	989.25	NA	990.05	NA	989.60	NA
OU313-D	BF	1,095.71	-	-	1,003.36	3.3E-02	991.90	3.5E-02	992.60	3.4E-02	993.01	3.0E-02	992.04	2.4E-02
OU314-M	SRG	1,099.05	-	-	1,003.72	NA	993.15	NA	993.40	NA	993.25	NA	993.10	NA
OU314-D	BF	1,099.14	-	-	1,012.48	1.2E-01	1,001.16	1.1E-01	1,003.84	1.0E-01	1,002.69	9.4E-02	1,001.83	8.7E-02
PZ01-S	SRG	1,102.69	1,020.35	NA	1,003.40	NA	993.74	NA	998.07	NA	993.89	NA	993.92	NA
PZ01-D	BR	1,102.69	1,020.39	3.4E-04	1,003.45	4.2E-04	993.70	-3.4E-04	998.04	-3.0E-04	993.86	-3.0E-04	993.89	-3.0E-04
PZ02-S	SRG	1,107.95	1,020.15	NA	1,003.31	NA	993.65	NA	997.88	NA	993.67	NA	993.68	NA
PZ02-D	BR	1,107.95	1,020.13	-1.6E-04	1,003.35	3.2E-04	993.68	2.4E-04	997.90	2.0E-04	993.70	3.0E-04	993.70	2.0E-04

Notes:

- SRG - Salt River Gravels
- BF - Basin Fill Deposits
- BR - Bedrock
- A negative number indicates a Downward Gradient
- NA - Not Applicable
- ft. AMSL - feet Above Mean Sea Level
- ft/ft - feet per foot
- "-" - Not Measured

Year	Calculated Horizontal	Wells Used in Calculations		
2001	2.2 x 10 ⁻³ SW	EW22-S	EW21	EW19-S
	4.9 x 10 ⁻³ SW	NW01	CRA01	EW07
2006	3.3 x 10 ⁻³ NE	DM515	NW08-S	EW06
	1.9 x 10 ⁻³ SW	EW22-S	EW21	EW19-S
	7.4 x 10 ⁻³ SW	NW01	CRA01	EW07
2016	2.4 x 10 ⁻³ SW	ASE86-A	NW23-S	NW08-S
	1.9 x 10 ⁻³ SW	EW22-S	OU317-S	OU312-M
	1.2 x 10 ⁻² SW	NW01	CRA01	EW07
2017	3.3 x 10 ⁻³ W-	ASE86-A	NW23-S	NW08-S
	1.8 x 10 ⁻³ SW	EW22-S	OU317-S	OU312-M
	7.6 x 10 ⁻³ SW	NW01	CRA01	EW07

Table 3.7

VOC Data for Salt River Gravel Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
SRG Wells																			
AS02	(3) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE19-A	(3) ND(2.0)	38	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE20-A	(3) -	-	-	-	ND(2.0)	14	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE22-A	(3) 51	8.2	10	21	53	9.3	7.8	13	-	-	-	-	-	-	-	-	-	-	-
ASE22-AR	(3) -	-	-	-	-	-	-	-	1.7	ND(0.5)	ND(0.5)	ND(0.5)	3.3	0.6	ND(0.5)	ND(0.5)	-	-	1.6
ASE26-A	(3) ND(2.0)	3.2	7.5	ND(2.0)	2.6	4.0	8.8	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE27-A	(3) 19	6.2	ND(5.0)	11	7.5	5.1	ND(5.0)	3.6	-	-	-	-	-	-	-	-	-	-	-
ASE28-A	(3) ND(2.0)	5.1	6.6	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE30-A	(3) 10	10	9.2	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE31-A	(3) 69	ND(2.0)	ND(5.0)	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE32-A	(3) 34	11	8.0	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE33-A	(3) 54	8.8	10	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE34-A	(3) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE34-B	(3) -	-	-	-	2.2	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE35-A	(3) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE36-A	(3) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE41-A	(3) -	-	-	-	ND(2.0)	37	ND(5.0)	9.3	-	-	-	-	-	-	-	-	-	-	-
ASE46-A	(3) -	-	-	-	2.0	30	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE51-A	(3) -	-	-	-	7.9	13	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE52-A	(3) -	-	-	-	23 /22	9.2 J/6.4 J	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	-	-	-	-	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	-	-22.5	-
ASE53-A	(3) -	-	-	-	14	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE54-A	(3) -	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE55-A	(3) -	-	-	-	ND(20)	52	ND(50)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE56-A	(3) -	-	-	-	ND(2.0)	64 J	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE57-A	(3) -	-	-	-	ND(20)	23	ND(50)	ND(20)	-	-	-	-	-	-	-	-	-	-	-
ASE58-A	(3) -	-	-	-	ND(2.0)	12	ND(5.0)	ND(2.0)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE59-A	(3) -	-	-	-	3.2 /3.2	41 /39	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE60-A	(3) -	-	-	-	40	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	0.7 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-39.5	ND
ASE61-A	(3) -	-	-	-	2.6	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	1.2 J /1.3 J	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	0.6	ND(0.5)	-	-2.1	ND
ASE62-A	(3) -	-	-	-	ND(2.0)	8.4	ND(5.0)	ND(2.0)	0.6	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	-0.1
ASE-63A	(3) -	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE64-A	(3) -	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE65-A	(3) -	-	-	-	10	ND(2.0)	ND(5.0)	3.5	4.9	ND(0.5)	ND(0.5)	1.2	2.1	ND(0.5)	ND(0.5)	0.7	-	-7.9	-2.8
ASE66-A	(3) -	-	-	-	ND(2.0)	4.6	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE-68A	(3) -	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
ASE69-A	(3) -	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE70-A	(3) -	-	-	-	27	ND(2.0)	ND(5.0)	12	11	ND(0.5)	ND(0.5)	0.8	8	ND(0.5)	0.6	1	-	-19	-3
ASE71-A	(3) -	-	-	-	67	10	ND(5.0)	17	-	-	-	-	-	-	-	-	-	-	-
ASE72-A	(3) -	-	-	-	60 /58	6.8 /6.7	7.0 /6.8	14/14	-	-	-	-	-	-	-	-	-	-	-
ASE73-A	(3) -	-	-	-	15	5.2	ND(5.0)	4.4	36	2.9	4.9	2.8	26 J	1.8 J	3.1 J	1.8 J	-	11	-10
ASE75-A	(3) -	-	-	-	ND(2.0)	2	ND(5.0)	ND(2.0)	0.7	0.5	ND(0.5)	ND(0.5)	0.6 J	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	-	-1.4	-0.1
ASE76-A	(3) -	-	-	-	3.2	3.2	ND(5.0)	ND(2.0)	2.7	1.2	1.6	0.7	2.9 /3	1 /1	1.3 /1.4	0.7 /0.7	-	-0.2	0.3
ASE77-A	(3) -	-	-	-	32	8.1	7.4	12	58	1.5	3.7	17	53	1.6	3.8	14	-	21	-5
ASE83-A	(3) -	-	-	-	6.9	3.6	ND(5.0)	2.3	4.5	ND(0.5)	ND(0.5)	ND(0.5)	2	ND(0.5)	ND(0.5)	ND(0.5)	-	-4.9	-2.5
ASE84-A	(3) -	-	-	-	7.1	2	ND(5.0)	2.3	77	3.2	5.9	3.1	26	1.1	2.5	1.6	-	18.9	-51
ASE85-A	(3) -	-	-	-	42	5.8	ND(5.0)	11	56	2.1	4.4	8.4	36 J	1.6 J	3.1 J	4.7 J	-	-6	-20
ASE86-A	(3) -	-	-	-	84	6.1	8.7	25	89	ND(0.5)	4.6	25	68	ND(0.5)	3.9	18	-	-16	-21
ASE87-A	(3) -	-	-	-	6.5/5.6	5.0/3.7	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	12	0.7	1.5	0.8	5.1	ND(0.5)	0.6	ND(0.5)	-	-1.4	-6.9
ASE89-A	(3) -	-	-	-	ND(2.0)	3.5	ND(5.0)	ND(2.0)	ND(1.7)	ND(1.7)	ND(1.7)	ND(1.7)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND

Table 3.7

VOC Data for Salt River Gravel Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID		July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
		TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
SRG Wells (cont'd)																				
ASE90-A	(3)	-	-	-	-	ND(2.0)	28 J	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE-91A	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE-92A	(3)	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE95-A	(3)	-	-	-	-	ND(2.0)	5.2	ND(5.0)	ND(2.0)	ND(0.5)/ND(0.5)	0.6 / 0.6	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE96-A	(3)	-	-	-	-	ND(2.0)	11	ND(5.0)	ND(2.0)	ND(0.5)/ND(0.5)	0.6 / 0.6	0.6 / 0.6	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE97-A	(3)	-	-	-	-	ND(2.0)	9.1 J	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE98-A	(3)	-	-	-	-	ND(2.0)/2.0	ND(2.0)/2.0	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE99-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE100-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE101-A	(3)	-	-	-	-	ND(2.0)	2	ND(5.0)	ND(2.0)	ND(0.5)	0.7	0.6	ND(0.5)	ND(1)	ND(1)	ND(1)	ND(1)	-	ND	ND
ASE102-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE103-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE105-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE106-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	ND
ASE107-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE108-A	(3)	-	-	-	-	2.4	25	ND(5.0)	ND(2.0)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-1.9	ND
ASE109-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE110-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	ND	-
ASE112-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE116-A	(3)	-	-	-	-	7.9 /8.5	ND(2.0)/2.0	ND(5.0)/ND(5.0)	3.3/3.5	ND(0.5)	ND(0.5)	0.6	ND(0.5)	-	-	-	-	-	-	-
ASE118-A	(3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE124-A	(3)	-	-	-	-	ND(2.0)/2.0	2.6 /2.6	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	ND(0.5)	0.6	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE125-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE126-A	(3)	-	-	-	-	ND(2.0)	15 J	ND(5.0)	ND(2.0)	1.4 / 1.4	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	0.8	ND(0.5)	ND(0.5)	ND(0.5)	-	-1.2	-0.6
ASE128-A	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	-	ND	ND
ASE129-A	(3)	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE-130A	-	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
ASE-131A	(3)	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
BC03	(3)	52	ND(2.0)	7.7	35	15	ND(2.0)	ND(5.0)	5	6.7	ND(0.5)	ND(0.5)	1.3	5	ND(0.5)	ND(0.5)	0.9	-47	-10	-1.7
BC08-B	(3)	ND(2.0)	37	ND(5.0)	ND(2.0)	ND(2.0)	24	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
BC09	(3)	80	10	ND(5.0)	14	81	9.8	ND(5.0)	16	22	5	ND(0.5)	7.5	-	-	-	-	-	-	-
BC10-A	(3)	ND(2.0)	2.3	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
BC12	(3)	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	ND
BC16	-	91	ND(2.0)	18	73	35	ND(2.0)	ND(5.0)	15	17.4	ND(1.0)	ND(1.0)	1.3	13.3	ND(1.0)	ND(1.0)	ND(1.0)	-77.7	-21.7	-4.1
BC18	(3)	5.8	8.6	ND(5.0)	ND(2.0)	-	-	-	-	2.5	ND(0.5)	ND(0.5)	0.5	2.3	ND(0.5)	ND(0.5)	ND(0.5)	-3.5	-	-0.2
BR05	(1)	-	-	-	-	35	ND(0.5)	2.4	12.57	-	-	-	-	-	-	-	-	-	-	-
CRA01	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.0	ND(1.0)	ND(1.0)	ND(1.0)	3.4	ND(1.0)	ND(1.0)	ND(1.0)	2.4	2.4	1.4
DM507-084	(1)	170	0.59	24	130	57	ND(0.5)	6.7	25	-	-	-	-	-	-	-	-	-	-	-
DM510-070	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM510-110	(1)	360	ND(0.50)	19	180	260	ND(0.5)	14	83	69.9	ND(0.5)	2	19.4	63.7	ND(0.5)	1.5	16.6	-296.3	-196.3	-6.2
DM511-065	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-060	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-090	(1)	-	-	-	-	0.58 J	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	4.7	ND(0.5)	ND(0.5)	ND(0.5)	-	4.12	4.2
DM513-070	(1)	6.3	ND(0.50)	ND(0.50)	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM514-065	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM515-065	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM515-115	(1)	23	ND(0.50)	6.9	190	4.5	0.59	1.9	40	-	-	-	-	-	-	-	-	-	-	-
DM516-065	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM516-150	(1)	150	35	42	211.4	16	1.1	1.6	23	23	2.4	2.5	37.4	82.3	0.93	3.1	21.2	-67.7	66.3	59.3

Table 3.7

VOC Data for Salt River Gravel Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
SRG Wells (cont'd)																			
DM517-070 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM517-125 ⁽¹⁾	32	23	13	13	8.6	4.2	3.5	3.4	4.1	1.2	2	ND(0.5)	2.6	0.68	0.89	ND(0.5)	-29.4	-6	-1.5
DW05 ⁽²⁾	-	-	-	-	1.1	ND(0.5)	0.78	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
EW06	44	55	38	7.3	4.9 J	4.4 J	4.8 J	1.2 J	2.0	ND(1.0)	ND(1.0)	ND(1.0)	2.6	ND(1.0)	ND(1.0)	ND(1.0)	-41.4	-2.3	0.6
EW07	13	ND(2.0)	ND(2.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.6 J	ND(1.0)	ND(1.0)	ND(1.0)	2.5	ND(1.0)	ND(1.0)	ND(1.0)	-10.5	1.5	-0.1
EW12-078 ⁽²⁾	240	5.9	5.3	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12-093 ⁽²⁾	340	4.7	11	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12-128 ⁽²⁾	440	4.0	10	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW13-118 ⁽²⁾	6.0	7.1	9.4	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
EW13-168 ⁽²⁾	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
EW19-S ⁽²⁾	290	11	11	85.1	68	11	9.8	19	-	-	-	-	-	-	-	-	-	-	-
EW20 ⁽²⁾	-	-	-	-	75	1.3	ND(0.5)	17.5	-	-	-	-	-	-	-	-	-	-	-
EW21 ⁽²⁾	36	ND(1.0)	ND(1.0)	5.5	5.1	ND(0.5)	ND(0.5)	0.57	-	-	-	-	-	-	-	-	-	-	-
EW22-S	190	ND(1.0)	ND(1.0)	39.2	37	1.5	1.7	8.3	5.7	ND(1.0)	ND(1.0)	ND(1.0)	3.8	ND(1.0)	ND(1.0)	ND(1.0)	-186.2	-33.2	-1.9
EW23 ⁽⁴⁾	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	-	-	-	-	-	-	-	-	-	-	-
FDMW07 ⁽⁴⁾	330	ND(1.0)	14	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW01(HERTZ) ⁽⁴⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW05 ⁽⁴⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW01	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	6.3	ND(1.0)	ND(1.0)	ND(1.0)	7.7	ND(1.0)	ND(1.0)	ND(1.0)	6.7	6.7	1.4
NW02	190	ND(2.0)	ND(2.0)	33	45	ND(1.0)	ND(1.0)	7.7	1.6	ND(1.0)	ND(1.0)	ND(1.0)	1.9 / 1.9	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	-188.1	-43.1	0.3
NW03	470	2.7	8.7	150	51	14	16	16	15.0	ND(1.0)	1.6	3.6	60.6	ND(1.0)	2.9	12.8	-409.4	9.6	45.6
NW04-S	-	-	-	-	16	ND(1.0)	ND(1.0)	2.8	0.50	ND(1.0)	ND(1.0)	ND(1.0)	1.5	ND(1.0)	ND(1.0)	ND(1.0)	-	-14.5	1
NW05-S	-	-	-	-	33	2.4	1.9	9.4	2.5	ND(1.0)	ND(1.0)	ND(1.0)	2.4	ND(1.0)	ND(1.0)	2.1	-	-30.6	-0.1
NW06-S	-	-	-	-	19	12	13	6.4	17.7	2.0	2.6	4.1	29.7	1.7	2.3	6.8	-	10.7	12
NW07-M	-	-	-	-	15	4.5	11	4.6	0.65	0.59 J	0.68 J	0.42 J	2.6	ND(1.0)	2.3	ND(1.0)	-	-12.4	1.95
NW07-S	-	-	-	-	1.7	1.3	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	2.1	ND(1.0)	ND(1.0)	ND(1.0)	-	0.4	1.6
NW08-S	-	-	-	-	23	12	13	8.2	22.0	1.0	1.6	10.8	61.2	ND(1.0)	2.3	14.0	-	38.2	39.2
NW09-M	-	-	-	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.2 / 1.4	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	0.82	ND(1.0)	ND(1.0)	ND(1.0)	-	-0.18	-0.38
NW11-M	-	-	-	-	14	5.2	10	3.6	7.1	2.4	6.3	2.0	8.8	2.2	5.1	2.2	-	-5.2	1.7
NW13-M	-	-	-	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	-	ND	ND
NW14-M	-	-	-	-	2.7/2.6	ND(1.0)/ND(1.0)	1.8 /1.8	ND(1.0)/ND(1.0)	2.0	ND(1.0)	2.6	ND(1.0)	2.7	ND(1.0)	2.4	ND(1.0)	-	0	0.7
NW16-M	-	-	-	-	-	-	-	-	102 J /101 J	14.7 J/13.9 J	33.3 J/30.9 J	17.8 J/16.5 J	97.9	12.2	29.3	18.1	-	-	-4.1
NW18-S	-	-	-	-	-	-	-	-	14.7	2.5	3.4	3.7	33.3	1.6	2.5	6.9	-	-	18.6
NW19-M	-	-	-	-	-	-	-	-	4.5	2.1	6.6	1.4	5.9 / 5.9	1.8 /1.7	4.9 / 4.7	1.4 / 1.4	-	-	1.4
NW21-S	-	-	-	-	-	-	-	-	5.9	ND(1.0)	ND(1.0)	0.39 J	5.1	ND(1.0)	ND(1.0)	ND(1.0)	-	-	-0.8
NW22-S	-	-	-	-	-	-	-	-	38.4 J	ND(1.0)	1.6 J	6.4 J	37.7	ND(1.0)	1.2	4.9	-	-	-0.7
NW23-S	-	-	-	-	-	-	-	-	7.6	2.2	2.8	1.9	10.3	2.1	2.7	2.0	-	-	2.7
NW24-S	-	-	-	-	-	-	-	-	65.9	ND(1.0)	4.2 J	19.0 J	82.4 /82.8	ND(1.0)/ND(1.0)	3.1 /3.2	15.2 /15.9	-	-	16.5
NW25-S	-	-	-	-	-	-	-	-	7.4 / 7.6	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	0.31 J/ND(1.0)	13.0 / 13.1	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	-	-	5.6
OU301-M ⁽³⁾	-	-	-	-	7.0/6.9	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	0.99/0.94	1.6	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU302-M ⁽³⁾	-	-	-	-	210	13	26	48	19 /19	1.4 / 1.3	1.7 / 1.8	3.3 / 3.3	-	-	-	-	-	-	-
OU304-S ⁽³⁾	-	-	-	-	1	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU305-M ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU305-MR ⁽³⁾	-	-	-	-	210 /200	3.1 /3.5	5.6 /5.1	40/40	17	0.73	1.3	3.1	-	-	-	-	-	-	-
OU305-S ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU305-SR ⁽³⁾	-	-	-	-	100	1.4	1.9	19	4.4	ND(0.50)	ND(0.50)	0.82	-	-	-	-	-	-	-
OU306-M ⁽³⁾	-	-	-	-	14	6.5	9.8	3.5	1.1	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU307-M2 ⁽³⁾	-	-	-	-	2.3	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU307-S ⁽³⁾	-	-	-	-	0.64	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-

Table 3.7

VOC Data for Salt River Gravel Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
SRG Wells (cont'd)																			
OU308-M2 ⁽³⁾	-	-	-	-	42	ND(0.5)	ND(0.5)	2.8	5.7 / 5.4	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	-	-	-	-	-	-	-
OU308-S ⁽³⁾	-	-	-	-	14	ND(0.5)	ND(0.5)	1.4	-	-	-	-	-	-	-	-	-	-	-
OU309-S ⁽³⁾	-	-	-	-	1.2	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU310-M ⁽³⁾	-	-	-	-	130	20 E	25	29	7.3	0.97	2.1	2.1	-	-	-	-	-	-	-
OU310-M2 ⁽³⁾	-	-	-	-	180	24	38	37.72	17	1.7	3.9	3.1	-	-	-	-	-	-	-
OU310-SR ⁽³⁾	-	-	-	-	46	9.7	1	-	4.3	0.60	0.67	1.0	-	-	-	-	-	-	-
OU311-M ⁽³⁾	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU311-S ⁽³⁾	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU312-M ⁽³⁾	-	-	-	-	16	8	12	4.1	5.1	1.1	1.7	1.1	-	-	-	-	-	-	-
OU313-M ⁽³⁾	-	-	-	-	73	ND(0.5)	ND(0.5)	5.6	12	ND(0.50)	ND(0.50)	1.0	-	-	-	-	-	-	-
OU314-M ⁽³⁾	-	-	-	-	0.65	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU316-M ⁽³⁾	-	-	-	-	-	-	-	-	53	4.3	6.5	9.7	-	-	-	-	-	-	-
OU316-S ⁽³⁾	-	-	-	-	-	-	-	-	21	1.8	1.9	4.2	-	-	-	-	-	-	-
OU317-S ⁽³⁾	-	-	-	-	-	-	-	-	1.2	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU319-M ⁽³⁾	-	-	-	-	-	-	-	-	39 / 39	2.7 / 2.8	4.9 / 4.7	7.6 / 7.4	-	-	-	-	-	-	-
OU320-M ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU320-S ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHXA01 ⁽⁴⁾	-	-	-	-	ND(0.50)	ND(1.0)	ND(0.50)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
PHXA02 ⁽⁴⁾	-	-	-	-	ND(0.50)	ND(1.0)	ND(0.50)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
PHXA04 ⁽⁴⁾	-	-	-	-	2.1	2.4	2.8	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
PHXA05 ⁽⁴⁾	-	-	-	-	0.85	ND(1.0)	0.83	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
PHXA06 ⁽⁴⁾	-	-	-	-	4.8	5.9	6.2	1.3	-	-	-	-	-	-	-	-	-	-	-
PL101-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	2.5	-	-	-	-	-	-	-	-	-	-	-
PL102-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
PL103-A ⁽³⁾	75	ND(2.0)	11	53	40 J	ND(2.0)	ND(5.0)	12 J	-	-	-	-	-	-	-	-	-	-	-
PL104-A ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PL105-A ⁽³⁾	ND(2.0)	130	ND(5.0)	ND(2.0)	ND(2.0)	61	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
PL201-A ⁽³⁾	2.8	9.4	ND(5.0)	ND(2.0)	ND(2.0)/ND(2.0)	10 / 10	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
PL202-C ⁽³⁾	ND(2.0)	4.0	ND(5.0)	ND(2.0)	ND(2.0)	2.5	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
PL202-S ⁽³⁾	5.3	6.7	ND(5.0)	2.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PL2101 ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	5	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	ND
PL2102 ⁽³⁾	2.6	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-2.1	ND	ND
PL2102-A ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PZ01-A	230	ND(2.0)	51	190	70	ND(2.0)	10	46	-	-	-	-	-	-	-	-	-	-	-
PZ01-S	64	ND(2.0)	ND(2.0)	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PZ02-S	31	ND(2.0)	ND(2.0)	7.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCMW-1D ⁽³⁾	-	-	-	-	15	9.6	11	3.7	5.1	1.2	1.0	1.2	-	-	-	-	-	-	-
TEW01	140	ND(1.0)	1.1	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TT02 ⁽²⁾	2.4	-	3.4	-	0.43 J/0.48 J	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
TT05 ⁽²⁾	ND(1.0)	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SRG/BF Wells																			
ASE37-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	3.8	ND(2.0)	ND(5.0)	3.1	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE38-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	4.8	ND(2.0)	ND(5.0)	2	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE39-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	4.5	ND(2.0)	ND(5.0)	8.1	-	-	-	-	-	-	-	-	-	-	-
ASE63-A ⁽³⁾	-	-	-	-	4.6	ND(2.0)	ND(5.0)	9.4	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-4.1	ND
ASE67-A ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE68-A ⁽³⁾	-	-	-	-	5.6	18	ND(5.0)	17	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-5.1	ND
ASE91-A ⁽³⁾	-	-	-	-	ND(2.0)	95	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
ASE92-A ⁽³⁾	-	-	-	-	ND(2.0)	14	ND(5.0)	4.8	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND

Table 3.7

VOC Data for Salt River Gravel Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
SRG/BF Wells (cont'd)																			
ASE111-A ⁽³⁾	-	-	-	-	6.9 J	-	-	-	ND(0.5)	ND(0.5)	0.6	ND(0.5)	-	-	-	-	-	-	-
ASE113-A ⁽³⁾	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	0.5	ND(0.5)	-	-	-	-	-	-	-
ASE114-A ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
ASE115-A ⁽³⁾	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	0.8	ND(0.5)	-	-	-	-	-	-	-
ASE120 ⁽³⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ASE122-A ⁽³⁾	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE123-A ⁽³⁾	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
ASE130-A ⁽³⁾	-	-	-	-	-	-	-	-	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	-	-	ND
BC07-A ⁽³⁾	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
EW03	630	ND(5.0)	35	225.5	320	ND(0.5)	25	121.1	83.7	ND(1.0)	9.7 J	45.1 J	116	ND(1.0)	8.1	37.9	-514	-204	32.3
EWM	320	ND(1.0)	5.1	72	170	3.8	9.2	37	39.6	ND(1.0)	1.6	8.3	38.7	ND(1.0)	1.3	7.2	-281.3	-131.3	-0.9
EWN	98	ND(1.0)	ND(1.0)	14	14	ND(1.0)	ND(1.0)	1.5	6.9	ND(1.0)	ND(1.0)	ND(1.0)	7.7	ND(1.0)	ND(1.0)	ND(1.0)	-90.3	-6.3	0.8
EWSPZ1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU305-M2 ⁽³⁾	-	-	-	-	210	4.6	7.2	32.92	34 / 34	1.4 / 1.6	2.0 / 2.6	5.5 / 6.1	-	-	-	-	-	-	-
OU309-M2 ⁽³⁾	-	-	-	-	4 /4.3	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	0.72/0.76	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU311-M2 ⁽³⁾	-	-	-	-	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	0.51/0.47 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
SRG/BR Wells																			
ASE127-A ⁽³⁾	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
PHXA03 ⁽⁴⁾	-	-	-	-	1.2	ND(1.0)	1.1	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
SRG/CV Wells																			
ASE81-A ⁽³⁾	-	-	-	-	12	ND(2.0)	ND(5.0)	3.9	2	ND(0.5)	ND(0.5)	ND(0.5)	2.4	ND(0.5)	ND(0.5)	ND(0.5)	-	-9.6	0.4
BC06 ⁽³⁾	6.0	2.1	ND(5.0)	ND(2.0)	5.0	3.8	ND(5.0)	ND(2.0)	0.7	ND(0.5)	ND(0.5)	ND(0.5)	0.7	ND(0.5)	ND(0.5)	ND(0.5)	-5.3	-4.3	0
SRG/BF/BR Wells																			
DM518-OB1 ⁽⁴⁾	180	3.5	13	91	260	1.4	14	77	-	-	-	-	-	-	-	-	-	-	-
EWS	320	12	16	83	33	12	14	9.3	37.2	2.3	4.3	8.9	45.4	1.5	3.3	9.8	-274.6	12.4	8.2

Notes:

µg/L - micrograms per liter

TCE - Trichloroethylene

1,1-DCA - 1,1 Dichloroethane

1,1-DCE - 1,1 Dichloroethene

1,2-DCE - 1,2 Dichloroethene

VOC - Volatile Organic Compound

SRG - Salt River Gravel

BF - Basin Fill

BR - Bedrock

CV - Colluvium

(1) Sampled by Clear Creek Associates

(2) Sampled by ERM

(3) Sampled by CH2M

(4)Well historically sampled, no longer part of the OU2 GES Monitor Well Network

J - Analyte was analyzed for and was positively defined, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.

Results are estimated although the data are considered usable and may be used as appropriate to meet project objectives. Results are qualitatively acceptable and quantitatively uncertain.

ND - Not detected

ND(x.x)- Not detected above the reported sample quantitation limit x.x. For VOC analytical data, there is not a quantitation limit due to varying limits in data used.

ND(0.5)/ND(0.5)- Second Result value is duplicate sample.

Table 3.8

VOC Data for Basin Fill Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

July - September 2001 (Baseline)*					September 2006				September 2016				September 2017				Change in TCE			
Well ID		TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
BF Wells																				
ASE40-B	(3)	ND(2.0)	13	ND(5.0)	ND(2.0)	ND(2.0)	3	ND(5.0)	ND(2.0)	0.9	0.8	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	-0.4
ASE41-B	(3)	ND(2.0)	13	ND(5.0)	ND(2.0)	4.6	13	ND(5.0)	2.8	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND	-4.1	ND
ASE44-B	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	2.4	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE45-B	(3)	ND(2.0)	13	ND(5.0)	ND(2.0)	16	17	ND(5.0)	2.8	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND	-15.5	ND
ASE46-B	(3)	ND(2.0)	5.8	ND(5.0)	ND(2.0)	ND(2.0)	4.7	ND(5.0)	2.4	1.5 J	1.8 J	ND(0.5)UJ	ND(0.5)UJ	1.3	0.9	ND(0.5)	ND(0.5)	-0.7	-0.7	-0.2
ASE48-B	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	6.3	13	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	-5.8	ND
ASE49-B	(3)	ND(2.0)	6.1	ND(5.0)	ND(2.0)	25	5.6	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND	-24.5	ND
ASE73-B	(3)	-	-	-	-	15	5	ND(5.0)	5.4	29 /28	2.3 /2.3	4.2 /4	2.4 /2.4	23 J	1.5 J	2.3 J	1.6 J	-	8	-6
ASE76-B	(3)	-	-	-	-	150	2.6	14	26	220	17	53	50	200 /200	20 /21	50 /54	50 /51	-	50	-20
ASE77-B	(3)	-	-	-	-	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE78-B	(3)	-	-	-	-	48	13	30	15	37	12	21	11	25 J	7.8 J	14 J	7.6 J	-	-23	-12
ASE83-B	(3)	-	-	-	-	31	23	22	15	4.9	2.2	2.6	1.4	6.2	1.8	2.2	1.4	-	-24.8	1.3
ASE85-B	(3)	-	-	-	-	130	12	18	27	66	5.7	9	11	60	4.4	7.1	10	-	-70	-6
ASE88-B	(3)	-	-	-	-	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	2.1	ND(0.5)	ND(0.5)	ND(0.5)	1.8	ND(0.5)	ND(0.5)	ND(0.5)	-	-0.2	-0.3
BC01	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	ND
BC02	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	27	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	-26.5	ND
BC04	(3)	23	ND(2.0)	ND(5.0)	3.1	21	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	2.2	ND(0.5)	ND(0.5)	ND(0.5)	-20.8	-18.8	1.7
BC08-A	(3)	3.7	ND(2.0)	ND(5.0)	ND(2.0)	4.3	2.2	9.5	ND(2.0)	3.3	ND(0.5)	ND(0.5)	ND(0.5)	0.7	ND(0.5)	ND(0.5)	ND(0.5)	-3	-3.6	-2.6
BC10-B	(3)	19	ND(2.0)	ND(5.0)	6.6	22	2.4	6.5	8.8	14	6	20	3.9	11 / 11	4.1 / 4.4	12 / 13	3 / 2.7	-8	-11	-3
BC11-B	(3)	27	23	15	11	32	7.4	8.2	12	19	4.1 J	5.3	4	20	3	5.2	3.7	-7	-12	1
BC13	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
BC14	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
BC15	(3)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	ND	ND	ND
DM118	(1)	1.2	-	ND(0.5)	ND(0.5)	2.4	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	17.8	ND(0.5)	ND(0.5)	1.2	16.6	15.4	-
DM119-072	(1)	-	-	-	-	-	-	-	-	-	-	-	-	0.63	ND(0.5)	ND(0.5)	0.89	-	-	-
DM119-098	(1)	-	-	-	-	-	-	-	-	-	-	-	-	1.1	ND(0.5)	ND(0.5)	15.6	-	-	-
DM120	(1)	3.7	-	ND(0.5)	ND(0.5)	14	ND(0.5)	ND(0.5)	1	-	-	-	-	19.8	ND(0.5)	ND(0.5)	1	16.1	5.8	-
DM122-A	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM122-B	(1)	ND(0.5)	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	-
DM501-147	(1)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	1.6	ND(0.5)	ND(0.5)	ND(0.5)	16.2	ND(0.5)	ND(0.5)	0.93	17.2	ND(0.5)	ND(0.5)	1.1	16.7	15.6	1
DM501-202	(1)	6.1	ND(0.50)	ND(0.50)	0.9	2.3	ND(0.5)	ND(0.5)	ND(0.5)	12.1	ND(0.5)	ND(0.5)	1.1	14.5	ND(0.5)	ND(0.5)	1.1	8.4	12.2	2.4
DM502-079	(1)	7.1	-	4.4	16	9	ND(0.5)	0.64	3.6	-	-	-	-	-	-	-	-	-	-	-
DM502-119	(1)	6.5	-	2.9	67	4.7 J	ND(0.5)	2.1 J	42 J	-	-	-	-	2.1	ND(0.5)	0.53	29.5	-4.4	-2.6	-
DM506-100	(1)	21	ND(0.50)	8	24	36	ND(0.5)	14	34	ND(0.5)	ND(0.5)	0.6	1.4	1.2	ND(0.5)	ND(0.5)	ND(0.5)	-19.8	-34.8	0.7
DM506-185	(1)	160	ND(0.50)	0.75	17	86 /69	0.53 /ND(0.5)	ND(0.5)/ND(0.5)	15/15	ND(0.5)	ND(0.5)	ND(0.5)	4.1	15.2	ND(0.5)	ND(0.5)	1.3	-144.8	-70.8	14.7
DM509		870	ND(0.50)	3.7	163.1	890	ND(2.5)	20	310	493	ND(1.0)	41.7	195.48	515	ND(4.0)	23.3	142	-355	-375	22
DM511-110	(1)	240	ND(0.50)	4.1	22	300	ND(0.5)	11 J	44 J	69.9	ND(0.5)	2	19.4	66.7	ND(0.5)	2.1	14.5	-173.3	-233.3	-3.2
DM511-135	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-155	(1)	-	-	-	-	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	ND	ND
DM513-145	(1)	72	ND(0.50)	0.5	5.5	71	ND(0.5)	0.83	4.5	18.8 /18.4	ND(0.5)/ND(0.5)	0.62 /0.6	40.3 / 38.8	-	-	-	-	-	-	-
DM513-195	(1)	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	0.59	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-
DM515-210	(1)	-	-	-	-	20	ND(0.5)	ND(0.5)	0.79	71.8 J	ND(0.5)	ND(0.5)	4.5	92.7	ND(0.5)	ND(0.5)	6	-	72.7	20.9
DM516-210	(1)	200	35	39	110.8	3	1.2	1.6	36	-	-	-	-	5.1	2.1	2.3	98.36	-194.9	2.1	-
DM605-105	(1)	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	33.1	-	-	-
EW01	(1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW02	(1)	99	ND(5.0)	ND(5.0)	5.1	56	ND(0.5)	2.8	2	3.3	ND(0.5)	ND(0.5)	ND(0.5)	3.7	ND(0.5)	ND(0.5)	ND(0.5)	-95.3	-52.3	0.4
EW12-180		500	7.8	19	48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12-227		400	3.4	7.5	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW12-239		4.9	ND(1.0)	ND(1.0)	ND(1.0)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.8

VOC Data for Basin Fill Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
BF Wells (cont'd)																			
EW13-228	(2) -	-	-	-	3.3	ND(0.5)	ND(0.5)	ND(0.5)	1.5	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
EW13-268	(2) -	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
EW13-300	(2) ND(0.5) UJ	ND(0.5) UJ	ND(0.5) UJ	ND(0.5) UJ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EW19-D	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
EW22-D	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND	ND	ND
NW04-D	-	-	-	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	-	ND	ND
NW06-D	-	-	-	-	47	ND(1.0)	ND(1.0)	3.2	4.6	0.55 J	1.5 J	24.77	29.9	ND(1.0)	1.2	8.0	-	-17.1	25.3
NW07-D	-	-	-	-	25 /25	1.6 /1.7	8.4 /8.8	5.3 /5.5	4.3 / 4.4	ND(1.0)/ND(1.0)	1.5 / 1.4	ND(1.0)/ND(1.0)	4.8	ND(1.0)	1.0	ND(1.0)	-	-20.2	0.5
NW08-D	-	-	-	-	ND(1.0)/(ND(1.0)	ND(1.0)/(ND(1.0)	ND(1.0)/ND(1.0)	ND(1.0)/ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	-	ND	ND
NW08-M	-	-	-	-	190	6.4	15	22	42.7	8.5	16.2	10.1	56.7	6.1	13.3	10.8	-	-133.3	14
NW09-D	-	-	-	-	7.7	ND(1.0)	1.3	1.5	5.2	0.38 J	2.1	1.1	7.6	ND(1.0)	2.5	1.4	-	-0.1	2.4
NW09-D2	-	-	-	-	10	ND(1.0)	1.2	2	2.2	ND(1.0)	0.43 J	0.45 J	3.5	ND(1.0)	ND(1.0)	ND(1.0)	-	-6.5	1.3
NW10-D	-	-	-	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	-	ND	ND
NW11-D	-	-	-	-	21	1	5.5	4.1	16.1	1.4	5.3	4.6	21.7	1.4	5.7	4.1	-	0.7	5.6
NW12-D	-	-	-	-	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	ND(0.50)	ND(1.0)	ND(1.0)	ND(1.0)	-	ND	ND
NW13-D	-	-	-	-	6.4	ND(1.0)	1.5	ND(1.0)	3.0 J	ND(1.0)	ND(1.0)	ND(1.0)	3.3	ND(1.0)	ND(1.0)	ND(1.0)	-	-3.1	0.3
NW14-D	-	-	-	-	20	3.3	12	5.4	13.1 J	1.4 J	6.6 J	2.6 J	13.2	ND(1.0)	5.2	3.0	-	-6.8	0.1
NW16-D	-	-	-	-	-	-	-	-	72.9 J	ND(1.0)	ND(1.0)	2.1 J	36.7/34.8	ND(1.0) / ND(1.0)	ND(1.0) / ND(1.0)	1.1 / 1.0	-	-	-36.2
NW19-D	-	-	-	-	-	-	-	-	33.8	5.1	20.0	10.7	40.4	4.6	17.8	8.8	-	-	6.6
NW22-D	-	-	-	-	-	-	-	-	20.2	ND(1.0)	ND(1.0)	1.2	28.8	ND(1.0)	ND(1.0)	1.5	-	-	8.6
NW23-D	-	-	-	-	-	-	-	-	13.3	3.6	9.9	3.6	18.8	4.0	10.5	4.4	-	-	5.5
NW24-D	-	-	-	-	-	-	-	-	201	ND(1.0)	1.9 J	13.2 J	187	ND(1.0)	1.4	11.2	-	-	-14
NW27-D	(2) -	-	-	-	-	-	-	-	-	-	-	-	45	1.6	6.7	9.9	-	-	-
OU301-D	(3) -	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU305-D	(3) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OU305-DR	(3) -	-	-	-	0.67	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU306-D	(3) -	-	-	-	1.7 /1.7	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU308-D	(3) -	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
OU312-D	(3) -	-	-	-	0.61	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU313-D	(3) -	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-
OU314-D	(3) -	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
PL202-N	(3) 110	ND(2.0)	7.3	13	150	2.7	26	25	-	-	-	-	110	31	62	28	0	-40	-
PL2103	(3) 4.6	ND(2.0)	ND(5.0)	ND(2.0)	2.2	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
PZ01-B	580	ND(2.0)	7.1	190	440 J	-	39 J	190 J	45.6	ND(1.0)	4.6	18.2	46.3	ND(1.0)	4.5	19.4	-533.7	-393.7	0.7
BF/BR Wells																			
ASE19-B	(3) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	16 /16	8.6 /8.7	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	0.7	ND(0.5)	ND(0.5)	ND(0.5)	0.5	ND(0.5)	ND(0.5)	ND(0.5)	-1.5	-15.5	-0.2
ASE120-B	(3) -	-	-	-	-	-	-	-	7.7	ND(0.5)	ND(0.5)	1.1	11 / 11	ND(0.5) / ND(0.5)	ND(0.5) / ND(0.5)	1.4 / 1.4	-	-	3.3
DM504	(1) 150 J	ND(5.0)UJ	9.3 J	34 J	69 /68	ND(0.5)/ND(0.5)	4.6 /4.4	23 /22	44.5	ND(0.5)	ND(0.5)	5.9	75.6	ND(0.5)	0.9	7	-74.4	6.6	31.1
BF/CV Wells																			
ASE29-A	(3) 2.6	ND(2.0)	ND(5)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
BC11-A	(3) 62	ND(2.0)	5.6	12	120	3.8	17	27	120	21	41	30	110	22	36	27	48	-10	-10
BC17	(3) 32	ND(2.0)	ND(5.0)	18	11	ND(2.0)	ND(5.0)	3.7	3.9	ND(0.5)	ND(0.5)	ND(0.5)	5.1	ND(0.5)	ND(0.5)	ND(0.5)	-26.9	-5.9	1.2
DM508	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BF/CV/BR Wells																			
ASE22-B	(3) 320	45	160	69	250/230	28 /26	74 /74	44/44	2.1/2.1	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	1.8	ND(0.5)	ND(0.5)	ND(0.5)	-318.2	-248.2	-0.3
ASE72-B	(3) -	-	-	-	350	12	27	51	48	ND(1.3)	4.2	5.3	110	32	67	29	-	-240	62

Table 3.8

VOC Data for Basin Fill Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)

Notes:

TCE - Trichloroethylene

1,1-DCA - 1,1 Dichloroethane

1,1-DCE - 1,1 Dichloroethene

1,2-DCE - 1,2 Dichloroethene

µg/L - micrograms per liter

VOC - Volatile Organic Compound

"-" - Not sampled

BF - Basin Fill

BR - Bedrock

CV - Colluvium

A positive value indicates an increase in TCE concentration (e.g., 1.8)

A negative value indicates a decrease in TCE concentration (e.g., -1.8)

J - Analyte was analyzed for and was positively defined, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.

Results are estimated although the data are considered usable and may be used as appropriate to meet project objectives. Results are qualitatively acceptable and quantitatively uncertain.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

ND - Not detected

ND(x.x) - Not detected above the reported sample quantitation limit x.x. For VOC analytical data, there is not a quantitation limit due to varying limits in data used

(1) Sampled by Clear Creek Associates

(2) Sampled by ERM

(3) Sampled by CH2M

* The value is the highest for a particular analyte collected during baseline sampling event (July - September 2001)

Table 3.9

VOC Data for Bedrock and Colluvium Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
BR Wells																			
ASE19-C	(2) 2.7	ND(2.0)	ND(5.0)	ND(2.0)	2.8	ND(2.0)	ND(5.0)	ND(2.0)	4	ND(0.5)	0.6	ND(0.5)	3.5	ND(0.5)	ND(0.5)	ND(0.5)	0.8	0.7	-0.5
ASE20-B	(2) 3.2	ND(2.0)	ND(5.0)	ND(2.0)	2.0	ND(2.0)	ND(5.0)	ND(2.0)	-	-	-	-	-	-	-	-	-	-	-
ASE20-C	(2) 11	ND(2.0)	ND(5.0)	ND(2.0)	8.2	ND(2.0)	ND(5.0)	ND(2.0)	5.6 J	0.5 J	ND(0.5)UJ	ND(0.5)UJ	4.6 J	ND(0.5)UJ	ND(0.5)UJ	ND(0.5)UJ	-6.4	-3.6	-1
ASE21-C	(2) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	ND
ASE22-C	(2) 19	ND(2.0)	ND(5.0)	ND(2.0)	43	ND(2.0)	ND(5.0)	ND(2.0)	79	0.8	7.4	1.8	73	0.8	6.6	1.5	54	30	-6
ASE24-C	(2) 12 /11	ND(2.0)/ND(2.0)	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	22	ND(2.0)	ND(5.0)	ND(2.0)	29	ND(0.5)	0.6	1.6	22	ND(0.5)	ND(0.5)	ND(0.5)	10	0	-7
ASE25-C	(2) 68	4.9	46	14	21	ND(2.0)	9.6	3.2	12	0.7	4.5	2.2	13	1	5.6	2.4	-55	-8	1
ASE42-C	(2) 62	66	57	25	19	18	9.2	7.2	-	-	-	-	-	-	-	-	-	-	-
ASE43-C	(2) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	1.2	ND(0.5)	ND(0.5)	ND(0.5)	-0.8	-0.8	0.7
ASE50-C	(2) ND(2.0)	ND(2.0)	ND(5.0)	ND(2.0)	ND(2.0)/ND(2.0)	ND(2.0)/ND(2.0)	ND(5.0)/ND(5.0)	ND(2.0)/ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	ND
ASE73-C	(2) -	-	-	-	95	16	20	25	71	12	17	17	63 J	11 J	15 J	18 J	-	-32	-8
ASE75-C	(2) -	-	-	-	3.2	ND(2.0)	ND(5.0)	ND(2.0)	11	ND(0.5)	1.1	2.9	11 / 12 J	ND(0.5) / ND(0.5)UJ	1.2 / 1.2 J	2.7 / 2.8 J	-	7.8	0
ASE79-C	(2) -	-	-	-	2.4 J	ND(2.0)	ND(5.0)	ND(2.0)	3.1	ND(0.5)	ND(0.5)	0.9	4.6	ND(0.5)	ND(0.5)	0.9	-	2.2	1.5
ASE82-C	(2) -	-	-	-	34	2.2	16	4.7	13	0.8	6.6	1.6	8.1	0.7	3.4	0.8	-	-25.9	-4.9
ASE83-C	(2) -	-	-	-	6.8	ND(2.0)	ND(5.0)	2.6	3	1.4	1.3	0.9	2.5	1	0.9	ND(0.5)	-	-4.3	-0.5
ASE84-C	(2) -	-	-	-	9.7	5.6	ND(5.0)	3.7	7.9	ND(0.5)	0.8	1.1	6	ND(0.5)	0.5	0.8	-	-3.7	-1.9
BC08-C	(2) -	-	-	-	4.2	ND(2.0)	ND(5.0)	ND(2.0)	0.9	ND(0.5)	ND(0.5)	ND(0.5)	2.4	ND(0.5)	ND(0.5)	ND(0.5)	-	-1.8	1.5
BC10-C	(2) -	-	-	-	2.1	ND(2.0)	ND(5.0)	ND(2.0)	15	ND(0.5)	ND(0.5)	3.2	12	ND(0.5)	ND(0.5)	2.6	-	9.9	-3
BR01	(2) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BR02	(2) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BR03	(2) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BR04	(2) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM119-137	(1) 2.3	-	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	34.4	-1.8	-	-
DM119-204	(1) -	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
DM119-244	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM119-284	(1) ND(0.5)	-	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM501-267	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM501-331	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM501-387	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM502-161	(1) ND(0.5)	-	0.81	12	ND(0.5)	ND(0.5)	ND(0.5)	1.9	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND	ND	-
DM502-240	(1) ND(0.5)	-	ND(0.5)	0.72	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
DM502-335	(1) ND(0.5)	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-	-	-	-	-
DM506-240	(1) 3.8	ND(0.50)	ND(0.50)	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM506-305	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM506-375	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM507-240	(1) ND(0.50)	ND(0.50)	ND(0.50)	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM507-280	(1) ND(0.50)	ND(0.50)	ND(0.50)	0.89	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM507-315	(1) ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM510-175	(1) 64	ND(0.50)	ND(0.50)	5.1	68	ND(0.5)	ND(0.5)	4.6	111	ND(0.5)	1.6	19.9	151	ND(0.5)	1.8	18.4	87	83	40
DM510-235	(1) 0.75	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM510-290	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM511-165	(1) 0.81/0.62	ND(0.50)/ND(0.50)	ND(0.50)/ND(0.50)	ND(0.50)/ND(0.50)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM511-225	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM511-290	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-225	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-295	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM512-345	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM513-240	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM513-280	(1) ND(0.50)	ND(0.50)	ND(0.50)	4.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM513-315	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM514-105	(1) 150	ND(0.50)	ND(0.50)	51	3.9 /3.0	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	1.9 /1.6	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	ND(0.5)/ND(0.5)	-149.5	-3.4	ND/ND
DM514-180	(1) ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-	-	-	-	-
DM514-240	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM514-295	(1) -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM515-265	(1) ND(0.50)	0.69	ND(0.50)	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.9

VOC Data for Bedrock and Colluvium Wells - September 2001, 2006, 2016, and 2017
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID	July - September 2001 (Baseline)*				September 2006				September 2016				September 2017				Change in TCE		
	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	TCE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	1,2-DCE (µg/L)	2001-2017 (µg/L)	2006-2017 (µg/L)	2016-2017 (µg/L)
DM515-320 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BR Wells (cont'd)																			
DM515-380 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM516-295 ⁽¹⁾	ND(0.50)	ND(0.50)	ND(0.50)	1.3	ND(0.50)	ND(0.50)	ND(0.50)	0.75	-	-	-	-	-	-	-	-	-	-	-
DM516-335 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM516-390 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM517-235 ⁽¹⁾	2.4	0.92	1.3	0.72	1.3	ND(0.50)	ND(0.50)	ND(0.50)	-	-	-	-	-	-	-	-	-	-	-
DM517-315 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM517-365 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DM605-170 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	2.4	37.5	-	-	-
DM605-240 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
DM605-290 ⁽¹⁾	-	-	-	-	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-
PL103-C ⁽²⁾	-	-	-	-	170	ND(2.0)	5.1	33	-	-	-	-	63	0.8	2.6	7.3	-	-107	-
PZ01-D	17	ND(2.0)	ND(2.0)	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PZ02-D	28	ND(2.0)	ND(2.0)	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV Wells																			
ASE47-B ⁽²⁾	47	ND(2.0)	ND(5.0)	13	91 J	2.6	6.7	27	52 J	20	63 J	17	54 / 53	23 /23	73 / 71	18 18	7	-37	2
ASE71-B ⁽²⁾	-	-	-	-	45 J	5.2	ND(5.0)	11	12	0.5	0.7	2.1	15	0.9	0.6	2.4	-	-30	3
DM507-188 ⁽¹⁾	1.6	ND(0.50)	2.9	160	1.4	ND(0.5)	5.8	93	-	-	-	-	-	-	-	-	-	-	-
DM517-185 ⁽¹⁾	41	33	22	17	12	5.5	4.8	5.0	3.6	1.2	1.5	0.71	-	-	-	-	-	-	-
NW15-S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NW17-S	-	-	-	-	-	-	-	-	47.6	1.0	2.0	10.0 J	51.9	ND(1.0)	1.8 J	9.7 J	-	-	4.3
NW18-M	-	-	-	-	-	-	-	-	70.3 J /67.7 J	0.22 J / ND(1.0)	1.2 J /1.2 J	4.0 J /3.5 J	-	-	-	-	-	-	-
CV/BR Wells																			
ASE23-B ⁽²⁾	66	ND(2.0)	ND(5.0)	17	84	5.0	10	34	63	19	35	22	37	13	16	15	-29	-47	-26
ASE43-B ⁽²⁾	5.4	ND(2.0)	ND(5.0)	ND(2.0)	2.4	ND(2.0)	ND(5.0)	ND(2.0)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-4.9	-1.9	ND
ASE75-B ⁽²⁾	-	-	-	-	17 /17	ND(2.0)/ND(2.0)	ND(5.0)/ND(5.0)	3.3 /3.4	33 / 34	3.3 /3.2	9.1/8.9	9.9 /10	38	5.5	12	13	-	21	5
DM505 ⁽²⁾	-	-	-	-	-	-	-	-	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)	-	-	-	-	-	-	-

Notes:

TCE - Trichloroethylene
1,1-DCA - 1,1 Dichloroethane
1,1-DCE - 1,1 Dichloroethene
1,2-DCE - 1,2 Dichloroethene
µg/L - micrograms per liter
VOC - Volatile Organic Compound
"- " - Not sampled
BR - Bedrock
CV - Colluvium

A positive value indicates an increase in TCE concentration (e.g., 1.8)
A negative value indicates a decrease in TCE concentration (e.g., -1.8)
ND - Not detected
ND(x.x) - Not detected above the reported sample quantitation limit x.x. For VOC analytical data, there is not a quantitation limit due to varying limits in data used.
J - Analyte was analyzed for and was positively defined, but the reported numerical value may not be consistent with the amount actually present in the environmental sample.
Results are estimated although the data are considered usable and may be used as appropriate to meet project objectives. Results are qualitatively acceptable and quantitatively uncertain.
⁽¹⁾ Sampled by Clear Creek Associates
⁽²⁾ Sampled by CH2MHill
* The value is the highest for a particular analyte collected during baseline sampling event (July - September 2001)

Table 4.1

Process Summary - Volumes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Date	Volume (Gallons)					
	EWN (x1,000)	EWM (x1,000)	EWS (x1,000)	Influent ¹ (EWN+M+S) (x1,000)	Treated Discharge (x1,000)	Backwash Wastewater Discharge
January 2017 Totals	2,889	5,299	1,164	9,352	9,045	13,150
February 2017 Totals	2,669	5,060	1,745	9,474	9,072	31,100
March 2017 Totals	8,560	15,051	5,622	29,233	28,963	30,600
April 2017 Totals	13,838	22,035	8,897	44,770	44,860	80
May 2017 Totals	19,830	32,169	12,330	64,329	64,213	111,680
June 2017 Totals	18,809	31,000	11,291	61,100	60,796	10,770
July 2017 Totals	19,169	32,486	11,149	62,804	62,499	14,770
August 2017 Totals	12,745	32,747	10,935	56,427	57,076	179,270
September 2017 Totals	18,176	30,443	10,599	59,218	59,784	9,190
October 2017 Totals	17,571	30,397	10,702	58,669	59,845	12,290
November 2017 Totals	15,920	29,431	9,930	55,281	55,824	84,570
December 2017 Totals	16,302	30,184	9,642	56,128	56,414	23,560
Total Gallons 2017	166,478	296,302	104,006	566,785	568,391	521,030
Total Gallons 2001 to 2017	4,485,472	9,550,149	1,983,582	16,019,160	15,787,221	13,435,902

Notes:

¹ The monthly combined influent flow is computed by adding the monthly influent flow from each extraction well as recorded on the SCADA system. The manufacturer's stated accuracy for the flow meters is plus or minus 2 percent.

Table 4.2

**Process Summary - Run Times
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date	Run Time (Hours)				
	EWN	EWM	EWS	Backwash Pump 1	Backwash Pump 2
January 2017 Totals	126.1	126.1	126.1	1.8	3.6
February 2017 Totals	104.6	104.4	104.2	1.5	13.0
March 2017 Totals	329.6	329.5	329.2	1.5	9.6
April 2017 Totals	528.7	531.1	531.6	0.0	0.0
May 2017 Totals	743.5	743.5	744.0	17.5	20.8
June 2017 Totals	720.0	719.9	720.0	3.3	0.0
July 2017 Totals	744.0	737.1	744.0	3.1	401.1
August 2017 Totals	481.7	735.0	738.1	47.8	0.0
September 2017 Totals	720.0	720.0	720.0	2.6	0.0
October 2017 Totals	744.0	744.0	744.0	3.3	0.0
November 2017 Totals	719.9	717.5	720.0	55.1	0.0
December 2017 Totals	744.0	744.0	744.0	104.1	0.0
Total Hours 2001 to 2017	121,464.0	126,789.7	122,318.5	3,445.5	3,587.5

Table 4.3

Summary of System 2017 Monthly Up-Time Percentages
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Month	Average Percent Uptime			System
	EWN	EWM	EWS	
January 2017	16.9%	16.9%	16.9%	16.9%
	100%*	100%*	100%*	100%*
February 2017	15.6%	15.5%	15.5%	15.6%
	100%*	100%*	100%*	100%*
March 2017	44.3%	44.3%	44.2%	44.3%
	100%*	100%*	100%*	100%*
April 2017	73.4%	73.8%	73.8%	73.7%
	100%**	100%**	100%**	100%**
May 2017	99.9%	99.9%	100.0%	100.0%
June 2017	100.0%	100.0%	100.0%	100.0%
July 2017	100.0%	99.1%	100.0%	100.0%
August 2017	64.7%	98.8%	99.2%	99.2%
September 2017	100.0%	100.0%	100.0%	100.0%
October 2017	100.0%	100.0%	100.0%	100.0%
November 2017	100.0%	99.7%	100.0%	100.0%
December 2017	100.0%	100.0%	100.0%	100.0%

Notes:

*Annual maintenance and SRP-mandated shutdowns removed from calculations

**Shutdown due to utility strike removed from calculations

Table 4.4

**Summary of Extraction Well Flow Rate Set Point Changes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date of Flow Change	Extraction Well Pumping Rates			Total (gpm)	Comments
	EWN (gpm)	EWM (gpm)	EWS (gpm)		
9/26/2001 (Startup)	1,350	1,750	850	3,950	
9/27 to 10/11/2001	NC	NC	0	3,100	
10/11/2001	NC	NC	550	3,650	
10/12/2001	NC	NC	550 to 600	3,700	EWS increased as part of startup flow adjustment.
11/13/2001	NC	NC	600 to 550	3,650	EWS reduced due to drop in water table elevation.
1/3/2002	1,350 to 0	1,750 to 0	550 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/4/2002	0 to 1,350	0 to 1,750	0 to 550	3,650	Extraction and Treatment System restarted.
3/19/2002	NC	NC	550 to 500	3,600	EWM reduced to alleviate air entrainment.
4/9/2002	1,350 to 1,250	1,750 to 1,650	NC	3,400	
7/9/2002	1,250 to 1,150	NC	NC	3,300	EWN reduced to alleviate air entrainment.
7/22/2002	NC	NC	500 to 450	3,250	EWS reduced due to low groundwater level.
9/20/2002	NC	NC	450 to 400	3,200	EWS reduced due to low groundwater level.
11/1/2002	1,150 to 850	1,650 to 1,550	NC	2,800	EWN pump bowl change-out.
11/15/2002	NC	1,550 to 1,450	NC	2,700	EWM reduced to assist EWS pumping rate.
11/17/2002	NC	NC	400 to 350	2,650	EWS reduced due to low groundwater level.
1/8/2003	850 to 0	1,450 to 0	350 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
1/31/2003	0 to 850	0 to 1,450	0 to 350	2,650	Extraction and Treatment System restarted.
6/2/2003	NC	NC	350 to 300	2,600	EWS reduced due to low groundwater level.
9/30/2003	850 to 650	NC	NC	2,400	EWS reduced due to low groundwater level.
10/7/2003	NC	NC	300 to 250	2,350	EWS was maintained at 250 gpm while operating in the cyclical pumping mode (20 hours on, 4 hours off), for an average flow rate of 209 gpm.
1/9/2004	650 to 0	1,450 to 0	250 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/11/2004	NC	0 to 1,450	0 to 250		Restart after Annual SRP Grand Canal Maintenance Shutdown.
2/11/2004	NC	1,450 to 1,650	250 to 200	1,850	EWS pump replaced with a 200 gpm submersible pump. EWN was kept offline after the restart of the system. EWN will remain offline until further notice. Adjusted flows to alleviate air entrainment.
6/7/2004	NC	1,650 to 0	NC	200	EWM down to replace pump bowl.
6/8/2004	0 to 850	0	NC	1,050	EWN up during EWM maintenance shutdown.
6/28/2004	850 to 0	0 to 1,550	NC	1,750	EWM restart after replacing pump bowl.
7/2/2004	0	1,550 to 1,500	NC	1,700	EWM reduced to alleviate air entrainment.
7/6/2004	0	1,500 to 1,400	NC	1,600	EWM reduced to alleviate air entrainment.
9/22/2004	0	1,400 to 1,350	NC	1,550	EWM reduced to alleviate air entrainment.
9/23/2004	600	1,350 to 1,300	NC	2,100	EWM reduced to alleviate air entrainment, started EWN to ensure capture.
10/5/2004	600	1,300	200 to 0	1,900	EWS down for pump motor replacement and well cleaning.
10/14/2004	600	1,300	0 to 200	2,100	EWS restarted after pump motor replacement and well cleaning.
11/20/2004	600 to 850	1,300 to 0	NC	1,050	EWM flow control valve malfunction.
11/24/2004	850 to 750	0 to 1,300	NC	2,250	EWM back online after fixing flow control valve.
11/30/2004	750 to 600	NC	NC	2,100	EWN back to normal operational set point.
12/29/2004	600 to 0	1,300 to 0	200 to 0	0	SRP Grand Canal shut down until January 7, 2005 due to flooding caused by heavy rains.
1/7/2005	NC	NC	NC	0	Annual SRP Grand Canal Maintenance Shutdown.
2/8/2005	0 to 800	NC	0 to 200	1,000	EWM was off for line shaft bearing replacement and pump motor leveling. EWN increased to ensure capture.
2/16/2005	800 to 600	0 to 1,350	NC	2,150	EWM restarted after line shaft bearing replacement and pump motor leveling. EWN reduced to prevent air entrainment.

Table 4.4

**Summary of Extraction Well Flow Rate Set Point Changes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date of Flow Change	Extraction Well Pumping Rates			Total (gpm)	Comments
	EWN (gpm)	EWM (gpm)	EWS (gpm)		
12/6/2005	600 to 0	1,350 to 0	200 to 0	0	Extraction and Treatment System shut down as a precaution due to the presence of TCE in the facility effluent. System to be restarted following carbon changeout in GAC Vessels.
12/14/2005	NC	0 to 1,350	NC	1,350	EWM restarted following carbon changeouts in GAC vessels.
12/15/2005	0 to 600	NC	0 to 200	2,150	EWS and EWN restarted following carbon changeouts in GAC vessels.
1/6/2006	600 to 0	1,350 to 0	200 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/6/2006	0 to 600	0 to 1,350	0 to 200	2,150	Restart after Annual SRP Grand Canal Maintenance Shutdown.
1/5/2007	600 to 0	1,350 to 0	200 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/5/2007	0 to 600	0 to 1,350	0 to 200	2,150	Restart after Annual SRP Grand Canal Maintenance Shutdown.
7/1/2007	600 to 0	NC	NC	1,550	EWN was offline for soft start replacement (due to power surge).
7/2/2007	NC	1,350 to 1,550	200	1,750	EWM increased to ensure capture.
7/6/2007	NC	NC	200 to 0	1,550	EWS was offline for pump replacement due to pump thrust bearings (pump replaced).
7/13/2007	0 to 600	1,550 to 1,350	0 to 200	2,150	EWN and EWS restarted following repairs to extraction wells. EWM reduced to prevent air entrainment.
12/4/2007	600 to 0	1,350 to 0	200 to 0	0	SRP Grand Canal shut down until December 17, 2007, due to SRP valve maintenance.
12/17/2007	0 to 600	0 to 1,350	0 to 200	2,150	Restart after SRP Grand Canal Shutdown.
1/4/2008	600 to 0	1,350 to 0	200 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/4/2008	0 to 600	0 to 1,350	0 to 200	2,150	Restart after Annual SRP Grand Canal Maintenance Shutdown.
4/29/2008	NC	NC	200 to 240	2,190	EWS was increased to test whether pump could operate at a higher flow rate and maximize groundwater capture.
1/9/2009	600 to 0	1,350 to 0	240 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/9/2009	0 to 600	0 to 1,350	0 to 240	2,190	Restart after Annual SRP Grand Canal Maintenance Shutdown.
1/11/2010	600 to 0	1,350 to 0	240 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/8/2010	0 to 600	0 to 1,350	0 to 240	2,190	Restart after Annual SRP Grand Canal Maintenance Shutdown.
8/4/2010	600 to 700	1,350 to 1,550	240 to 0	2,250	EWS was offline for pump replacement and well rehabilitation. EWN and EWM setpoints were increased to increase capture.
8/24/2010	700 to 600	1,550 to 1,290	0 to 300	2,190	EWM was decreased and EWS was increased to increase groundwater capture in southern part of plume.
11/15/2010	600 to 800	NC	NC	2,390	EWN was increased to increase groundwater capture in northern part of plume.
1/17/2011	800 to 0	1,290 to 0	300 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
1/21/2011	0 to 800	0 to 1,290	0 to 300	2,390	Restart after Annual SRP Grand Canal Maintenance Shutdown.
8/1/2011	800 to 700	1,290 to 1,390	NC	2,390	EWN set point was reduced due to a decrease in groundwater level. EWM set point was increased to increase capture.
8/21/2011	700 to 0	1,390 to 1,600	NC	1,900	EWN was offline for pump replacement due to damaged pump impellers. EWM set point was increased to increase capture.
8/29/2011	NC	1,600 to 1,860	NC	2,160	EWM set point was increased to increase capture.
10/6/2011	0 to 600	1,860 to 1,490	NC	2,390	EWN was restarted following pump and well rehabilitation.
1/9/2012	600 to 0	1,490 to 0	300 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/6/2012	0 to 600	0 to 1,490	0	2,090	Restart after Annual SRP Grand Canal Maintenance Shutdown. EWS failed to start due to damaged thrust bearing.
3/9/2012	NC	NC	0 to 300	2,390	EWS was restarted following pump replacement and well rehabilitation.
7/12/2012	NC	1,490 to 1,860	300 to 0	2,460	EWS was shutdown for VSD retrofit. EWM set point was increased to increase capture.

Table 4.4

**Summary of Extraction Well Flow Rate Set Point Changes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date of Flow Change	Extraction Well Pumping Rates			Total (gpm)	Comments
	EWN (gpm)	EWM (gpm)	EWS (gpm)		
7/16/2012	600 to 0	NC	NC	1,860	EWN was shutdown for VSD retrofit.
7/17/2012	NC	1,860	0 to 300	2,160	EWS was restarted following VSD retrofit.
7/19/2012	0 to 600	1,860 to 1,490	NC	2,390	EWN was restarted following VSD retrofit.
12/4/2012	NC	NC	300 to 270	2,360	EWS set point was decreased to troubleshoot flow oscillations.
12/11/2012	NC	1,490 to 1,520	NC	2,390	EWM set point was increased to increase capture.
12/13/2012	NC	NC	270 to 280	2,400	EWS set point was increased for flow oscillations troubleshooting.
12/28/2012	NC	NC	280 to 290	2,410	EWS set point was increased for flow oscillations troubleshooting.
12/31/2012	NC	NC	285	2,405	EWS set point was increased for flow oscillations troubleshooting.
1/7/2013	600 to 0	1,490 to 0	300 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
1/18/2013	0 to 600	0 to 1,500	300	2,400	Restart after Annual SRP Grand Canal Maintenance Shutdown.
2/4/2013	600 to 700	1,500 to 1,400	NC	2,400	Air entrainment in EWM flow reduction, flow increase in EWN.
3/1/2013	700 to 600	NC	NC	2,300	Air entrainment in EWN flow reduction.
4/12/2013	600 to 550	1,400 to 1,350	NC	2,200	Air entrainment in EWN and EWM flow reductions.
4/19/2013	550 to 600	1,350 to 1,300	NC	2,200	Air entrainment in EWM flow reduction, flow increase in EWN.
5/16/2013	600 to 550	NC	NC	2,150	Air entrainment in EWN flow reductions.
5/28/2013	NC	1,300 to 1,250	NC	2,100	Air entrainment in EWM flow reductions.
6/5/2013	NC	NC	300 to 0	1,800	EWS was offline for pump and motor replacement due to failed thrust bearing.
6/20/2013	NC	NC	0 to 300	2,100	EWS increased following replacement of pump and motor.
6/21/2013	550 to 500	NC	NC	2,050	Air entrainment in EWN flow reduction.
6/28/2013	NC	1,250 to 1,200	NC	2,000	Air entrainment in EWM flow reduction.
7/30/2013	NC	1,200 to 1,150	NC	1,950	Air entrainment in EWM flow reduction.
9/9/2013	NC	1,150 to 1,100	NC	1,900	Air entrainment in EWM flow reduction.
10/2/2013	500 to 475	1,100 to 1,050	NC	1,825	Air entrainment in EWN and EWM flow reductions.
10/21/2013	475 to 400	NC	NC	1,750	Air entrainment in EWN flow reduction.
11/21/2013	400	1,050 to 1,000	NC	1,700	Air entrainment in EWM flow reduction.
12/3/2013	400 to 0	1,000 to 0	300 to 0	0	SRP shutdown due to low water demand in the SRP Grand Canal.
12/9/2013	0 to 400	0 to 1,000	0 to 300	1,700	Restart after SRP Grand Canal Shutdown.
1/3/2014	400 to 0	1,000 to 0	300 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
1/25/2014	0 to 400	0 to 1,500	0 to 300	2,200	Restart after Annual SRP Grand Canal Maintenance Shutdown.
1/28/2014	NC	1,500 to 1,300	NC	2,000	Air entrainment in EWM flow reduction.
1/31/2014	NC	1,300 to 1,200	NC	1,900	Air entrainment in EWM flow reduction.
2/5/2014	NC	1,200 to 1,100	NC	1,800	Air entrainment in EWM flow reduction.
4/14/2014	NC	1,100 to 1,000	NC	1,700	Air entrainment in EWM flow reduction.
6/7/2014	400 to 500	NC	300 to 0	1,500	EWS was offline for pump and motor replacement due to failed thrust bearing. EWN was increased to increase capture.
7/17/2014	NC	NC	0 to 250	1,750	EWS increased following replacement of pump and motor.
7/20/2014	NC	NC	250 to 0	1,500	EWS was offline to repair faulty motor leads.
7/22/2014	500 to 400	NC	NC	1,400	Air entrainment in EWN flow reduction.
7/24/2014	NC	NC	0 to 250	1,650	EWS increased following repair of motor leads.
7/30/2014	NC	1,000 to 900	NC	1,550	Air entrainment in EWM flow reduction.
11/10/2014	NC	900 to 0	NC	650	EWM was offline to replace shaft oil seal and re-shim the well head and pump motor.
11/11/2014	NC	0 to 900	NC	1,550	EWM increased following shaft oil seal replacement and well head and pump motor re-shimming.
11/25/2014	NC	NC	250 to 275	1,575	EWS set point was increased to increase capture.
12/29/2014	400 to 0	900 to 0	275 to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/9/2015	0 to 500	0 to 1,100	0 to 300	1,900	Restart after Annual SRP Grand Canal Maintenance Shutdown.

Table 4.4

**Summary of Extraction Well Flow Rate Set Point Changes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date of Flow Change	Extraction Well Pumping Rates			Total (gpm)	Comments
	EWN (gpm)	EWM (gpm)	EWS (gpm)		
2/11/2015	500 to 400	NC	NC	1,800	Air entrainment in EWN flow reduction.
2/17/2015	NC	1,100 to 1,000	NC	1,700	Air entrainment in EWM flow reduction.
3/23/2015	NC	1,000 to 950	NC	1,650	Air entrainment in EWM flow reduction.
5/12/2015	NC	950 to 900	NC	1,600	Air entrainment in EWM flow reduction.
5/26/2015	NC	NC	300 to 275	1,575	Air entrainment in EWS flow reduction.
5/27/2015	NC	NC	275 to 250	1,550	Air entrainment in EWS flow reduction.
6/26/2015	NC	NC	250 to 225	1,525	Air entrainment in EWS flow reduction.
7/20/2015	NC	NC	Average 225	Average 1,525	EWS operational mode was switched from flow control to level control
8/5/2015	NC	900 to 850	NC	Average 1,475	Air entrainment in EWM flow reduction.
8/14/2015	400 to 375	NC	NC	Average 1,450	Air entrainment in EWN flow reduction.
11/10/2015	375 to 350	NC	Average 206	Average 1,406	Air entrainment in EWN flow reduction.
1/8/2016	350 to 0	850 to 0	Average 206 gpm to 0	0	Annual SRP Grand Canal Maintenance Shutdown.
2/8/2016	Average 445	0 to 1,100	Average 225	Average 1,770	Restart after Annual SRP Grand Canal Maintenance Shutdown. EWN operational mode was switched from flow control to level control
2/11/2016	NC	1,100 to 1,000	NC	Average 1,670	Air entrainment in EWM flow reduction.
2/16/2016	Average 396	1,000 to 900	NC	Average 1,521	Air entrainment in EWM flow reduction.
2/17/2016	NC	900 to 850	NC	Average 1,471	Air entrainment in EWM flow reduction.
2/23/2016	NC	850 to 800	NC	Average 1,421	Air entrainment in EWM flow reduction.
3/31/2016	Average 336	NC	Average 204	Average 1,390	Flow reductions due to decrease in groundwater levels
4/1/2016	Average 298	NC	Average 197	Average 1,295	Flow reductions due to decrease in groundwater levels
4/13/2016	NC	800 to 775	NC	Average 1,270	Flow reductions due to decrease in groundwater levels
5/1/2016	Average 294	NC	Average 190	Average 1,259	Flow reductions due to decrease in groundwater levels
6/1/2016	Average 285	NC	Average 179	Average 1,239	Flow reductions due to decrease in groundwater levels
7/1/2016	Average 301	NC	Average 175	Average 1,251	Flow reductions due to decrease in groundwater levels
8/1/2016	Average 303	NC	Average 174	Average 1,252	Flow reductions due to decrease in groundwater levels
9/1/2016	Average 315	NC	Average 170	Average 1,257	Flow reductions due to decrease in groundwater levels
9/6/2016	NC	775 to 725	NC	Average 1,210	Flow reductions due to decrease in groundwater levels
10/1/2016	Average 311	NC	NC	Average 1,206	Flow reductions due to decrease in groundwater levels
11/1/2016	Average 314	NC	Average 160	Average 1,199	Flow reductions due to decrease in groundwater levels
11/11/2016	NC	725 to 700	NC	Average 1,174	Flow reductions due to decrease in groundwater levels
12/1/2016	NC	NC	Average 154	Average 1,168	Flow reductions due to decrease in groundwater levels
1/5/2017	Average of 380 to 0	700 to 0	Average of 150 to 0	Average 1,230	Annual SRP Grand Canal Maintenance Shutdown.
2/6/2017	Average of 0 to 425	0 to 800	Average of 0 to 275	Average 1,500	Restart after Annual SRP Grand Canal Maintenance Shutdown.
2/10/2017	Average of 0 to 425	800 to 0	Average of 275 to 0	Average 1,500	SRP-mandated shutdown due to water releases from the Roosevelt Reservoir.
3/18/2017	Average of 0 to 430	0 to 760	Average of 0 to 285	Average 1,475	Restart after end of SRP-mandated shutdown.
4/13/2017	Average of 425 to 0	690 to 0	Average of 270 to 0	Average 1,385	Shut down system due to utility strike of effluent line in the vicinity of 24th Street and Roosevelt Street.
4/21/2017	Average of 0 to 440	0 to 680	Average of 0 to 285	Average 1,405	Restart after repair of effluent line.
5/1/2017	Average 445	750 to 710	Average 275	Average 1,441	Flow reductions due to decrease in groundwater levels
6/1/2017	Average 435	NC	Average 260	Average 1,414	Flow reductions due to decrease in groundwater levels
7/1/2017	Average 430	NC	Average 250	Average 1,407	Flow reductions due to decrease in groundwater levels
8/1/2017	Average 420	NC	Average 245	Average 1,349	Flow reductions due to decrease in groundwater levels

Table 4.4

**Summary of Extraction Well Flow Rate Set Point Changes
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona**

Date of Flow Change	Extraction Well Pumping Rates			Total (gpm)	Comments
	EWN (gpm)	EWM (gpm)	EWS (gpm)		
8/5/2017	420 to 0	NC	NC	Average 992	EWN offline after controls overheated due to a failed compressor in the control building's HVAC system.
8/16/2017	0 to 445	NC	Average 250	Average 1,425	EWN back online after repair of HVAC system.
9/1/2017	Average 420	710 to 700	NC	Average 1,371	Flow reductions due to decrease in groundwater levels
10/1/2017	Average 410	700 to 675	Average 240	Average 1,333	Flow reductions due to decrease in groundwater levels
10/24/2017	Average 345	NC	NC	Average 1,259	Reduce extraction from EWN to observe potential influence on EWM.
11/21/2017	Average 370	NC	Average 230	Average 1,280	Resume maximum rate at EWN due to lack of observed influence on EWM. Flow reductions due to decrease in groundwater levels.
12/1/2017	Average 365	NC	Average 215	Average 1,257	Flow reductions due to decrease in groundwater levels.

Notes:

gpm - gallons per minute
 SRP - Salt River Project
 GAC - granular activated carbon
 NC - no change
 TCE - Trichloroethylene
 VSD - variable speed drive
 HVAC - heating/ventilation/air conditioning

Entrained air collecting in the extraction wells, and subsequently in the carbon of the primary GAC adsorbers, can cause the GAC to become "blinded" by the air. This issue has been discussed in previous annual effectiveness reports, and had not been as significant a problem prior to 2012. However, throughout 2012, 2013, 2014, 2015, and 2016 the drop in regional groundwater elevations, resulting from the lack of groundwater recharge from the Salt River, has contributed to entrainment of air at the OU2 Groundwater Extraction System (GES) extraction wells. Despite the recent air entrainment in the extraction wells, the groundwater extraction and treatment system has sufficient capacity and flexibility to extract and treat the necessary amount of groundwater to maintain groundwater containment, as outlined in Section 3.3 of the 2017 Effectiveness Report.

Table 4.5

Summary of Combined Influent Analytical Results
VOCs
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Treated Groundwater Discharge Standards	Frequency: Date: Number: Status:	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
		1/4/2017	2/7/2017	3/20/2017	4/5/2017	5/15/2017	6/1/2017	7/6/2017	8/2/2017	9/5/2017	10/3/2017	11/1/2017	12/4/2017
		PS-010417-01	PS-020717-02	PS-032017-01	PS-040517-01	PS-051517-02	PS-060117-01	PS-070617-01	PS-080217-02	PS-090517-01	PS-100317-01	PS-110117-02	PS-120417-01
		Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM	1.8	1.8	2.1	2	2.1	2.3	2.1	1.9	1.9	2.1	2.1	1.8
Chloromethane	NNS	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7	1.4	1.5	1.5	1.3	1.9	1.7	1.3	1.6	ND(1.0)	1.2	1.3	1.2
cis-1,2-Dichloroethene	70	5.6	5.7	5.7	6.5	5.9	7.1	6	6.8	5.5	6.3	6.1	5.5
trans-1,2-Dichloroethene	100	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5	1.8	2	2.3	2	1.5	2.1	2.2	2.1	2	1.8	2.1	1.7
Toluene	1,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5	30.9	32.2	35.3	36	30.3	33.4	34.4	33.3	29.5	33	30.3	27.7
Trichlorofluoromethane	TTHM	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Field Parameters													
pH (s.u.)		7.1	7.05	7.06	6.85	7.05	6.94	7.18	7.14	7.16	7.1	7.01	7.05
Conductivity (µS/cm)		2,083	2,090	2,085	2,015	2,104	2,086	2,032	2,060	2,064	1,998	2,074	2,091
Temperature (°F)		75.8	76.5	77.7	72.2	77.7	78.1	78.9	79.3	78.0	77.7	77.1	76.7
System Status (X indicates operational)													
EWN		X	X	X	X	X	X	X	X	X	X	X	X
EWM		X	X	X	X	X	X	X	X	X	X	X	X
EWS		X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂													
Ultraviolet oxidation system without H ₂ O ₂													

Notes:

Status - Final - data validated by project chemist
µg/L - micrograms per liter
ND() - Not Detected at the reporting limit in parenthesis
TTHM - Total Trihalomethanes = 100 µg/L
NNS - No numeric standard

s.u. - standard units
µS/cm - microsiemens per centimeter
°F - degrees Fahrenheit
H₂O₂ - hydrogen peroxide

Table 4.6

Summary of Combined Influent Analytical Results
Metals and General Chemistry
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

		Sample Location: Combined Influent
	Treated Groundwater Discharge Standards	Frequency: Annually
		Date: 9/5/2017
		Number: PS-090517-01
		Status: Final
Total Recoverable Metals (mg/L)		
Arsenic	0.01	NS
Calcium	NNS	92.6
Magnesium	NNS	34.9
General Chemistry (mg/L)		
Alkalinity as CaCO ₃	NNS	248
Bicarbonate Alkalinity as CaCO ₃	NNS	2480
Total Dissolved Solids	NNS	1270
Hardness, Dissolved (CaCO ₃)	NNS	375
Field Parameters		
pH (s.u.)		7.16
Conductivity (µS/cm)		2,064
Temperature (°F)		78.0
System Status (X indicates operational)		
EWN		X
EWM		X
EWS		X
Ultraviolet oxidation system with H ₂ O ₂		
Ultraviolet oxidation system without H ₂ O ₂		

Notes:

mg/L - milligrams per liter

ND() - Not Detected at the reporting limit in parenthesis

NNS - No numeric standard

NS - Not Sampled

CaCO₃ - Calcium Carbonate

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

H₂O₂ - Hydrogen Peroxide

Status - Final - data validated by project chemist

Table 4.7

Summary of Analytical Results
Facility Discharge
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

	Treated Groundwater Discharge Standards	Frequency Date Number Status	Monthly 1/4/2017 PS-010417-06 Final	Monthly* 1/4/2017 PS-010417-07 Final	Monthly 2/7/2017 PS-020717-07 Final	Monthly* 2/7/2017 PS-020717-08 Final	Monthly 3/20/2017 PS-032017-06 Final	Monthly* 3/20/2017 PS-032017-07 Final	Monthly 4/5/2017 PS-040517-06 Final	Monthly* 4/5/2017 PS-040517-07 Final	Monthly 5/15/2017 PS-051517-07 Final	Monthly* 5/15/2017 PS-051517-08 Final	Monthly 6/1/2017 PS-060117-06 Final	Monthly* 6/1/2017 PS-060117-07 Final
Volatile Organic Compounds (VOCs) (µg/L)														
Benzene	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.1	1.2	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloromethane	NNS		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
cis-1,2-Dichloroethene	70		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.2	1.3	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichlorofluoromethane	TTHM		ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total Discharge VOCs			0.0	0.0	0.0	0.0	0.0	0.0	2.3	2.5	0.0	0.0	0.0	0.0
Field Parameters														
pH (s.u.)			6.94	6.94	7.13	7.13	6.96	6.96	7.06	7.06	7.15	7.15	7.1	7.1
Conductivity (µS/cm)			2,100	2,100	2,092	2,092	2,200	2,200	2,104	2,104	2,099	2,099	2,061	2,061
Temperature (°F)			76.0	76.0	76.9	76.9	78.9	78.9	78.1	78.1	77.2	77.2	79.5	79.5
System Status (X indicates operational)														
EWN			X	X	X	X	X	X	X	X	X	X	X	X
EWM			X	X	X	X	X	X	X	X	X	X	X	X
EWS			X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂														
Ultraviolet oxidation system without H ₂ O ₂														

Table 4.7

Summary of Analytical Results
Facility Discharge
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

	Treated Groundwater Discharge Standards	Frequency Date Number Status	Monthly 7/6/2017 PS-070617-06 Final	Monthly* 7/6/2017 PS-070617-07 Final	Monthly 8/2/2017 PS-080217-07 Final	Monthly* 8/2/2017 PS-080217-08 Final	Monthly 9/5/2017 PS-090517-06 Final	Monthly* 9/5/2017 PS-090517-07 Final	Monthly 10/3/2017 PS-100317-06 Final	Monthly* 10/3/2017 PS-100317-07 Final	Monthly 11/1/2017 PS-110117-07 Final	Monthly* 11/1/2017 PS-110117-08 Final	Monthly 12/4/2017 PS-120417-06 Final	Monthly* 12/4/2017 PS-120417-07 Final
Volatile Organic Compounds (VOCs) (µg/L)														
Benzene	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM		2.2	2.2	3.0	3.0	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	2.6	2.6	ND(1.0)	ND(1.0)
Chloromethane	NNS		ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
cis-1,2-Dichloroethene	70		1.2	1.2	5.3	5.4	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	3.2	3.2	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	100		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichlorofluoromethane	TTHM		ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2		ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total Discharge VOCs			3.4	3.4	8.3	8.4	0.0	0.0	0.0	0.0	5.8	5.8	0.0	0.0
Field Parameters														
pH (s.u.)			7.04	7.04	7.08	7.08	6.97	6.97	6.92	6.92	6.94	6.94	7.12	7.12
Conductivity (µS/cm)			2,048	2,048	2,069	2,069	2,074	2,074	2,010	2,010	2,052	2,052	2,085	2,085
Temperature (°F)			79.8	79.8	79.3	79.3	79.6	79.6	77.3	77.3	77.7	77.7	76.8	76.8
System Status (X indicates operational)														
EWN			X	X	X	X	X	X	X	X	X	X	X	X
EWM			X	X	X	X	X	X	X	X	X	X	X	X
EWS			X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂														
Ultraviolet oxidation system without H ₂ O ₂														

Notes:

* indicates a duplicate sample

µg/L - micrograms per liter

ND() - Not Detected at the reporting limit in parentheses

TTHM - Total Trihalomethanes = 100 mg/L

NNS - No numeric standard

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

J - Estimated concentration.

Status - Final - data validated by project chemist

H₂O₂ - Hydrogen peroxide

Table 4.8

Summary of Analytical Results
SRP Grand Canal Discharge
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

	Treated Groundwater Discharge Standards	Frequency: Date: Number: Status:	Annually 9/5/2017 PS-090517-11 Final
Volatile Organic Compounds (VOCs) (µg/L)			
Benzene	5		ND(1.0)
Bromodichloromethane	TTHM		ND(1.0)
Bromomethane	TTHM		ND(2.0)
Chloroform	TTHM		ND(1.0)
Chloromethane	NNS		ND(2.0)
1,1-Dichloroethane	NNS		ND(1.0)
1,2-Dichloroethane	5		ND(1.0)
1,1-Dichloroethene	7		ND(1.0)
cis-1,2-Dichloroethene	70		ND(1.0)
trans-1,2-Dichloroethene	100		ND(1.0)
Tetrachloroethene	5		ND(1.0)
Toluene	1,000		ND(1.0)
1,1,1-Trichloroethane	200		ND(1.0)
Trichloroethene	5		ND(0.50)
Trichlorofluoromethane	TTHM		ND(4.0)
Vinyl Chloride	2		ND(0.50)
Xylene	10,000		ND(1.0)
Field Parameters			
pH (s.u.)			7.09
Conductivity (µS/cm)			2,074
Temperature (°F)			79.9
System Status (X indicates operational)			
EWN			X
EWM			X
EWS			X
Ultraviolet oxidation system with H ₂ O ₂			
Ultraviolet oxidation system without H ₂ O ₂			

Notes:

Status - Final - data validated by project chemist

µg/L - micrograms per liter

ND() - Not Detected at the reporting limit in parenthesis

TTHM - Total Trihalomethanes = 100 mg/L

NNS - No numeric standard

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

H₂O₂ - Hydrogen peroxide

Table 4.9

Summary of Metals Analytical Results
SRP Grand Canal Discharge
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

	Surface Water Quality Standards ¹	Frequency: Date: Number: Status:	Annually 9/5/2017 PS-090517-15 Final
Total Recoverable Metals (mg/L)			
Arsenic	2		ND(0.008)
Barium	NNS		0.0511
Boron	1		1.99
Cadmium	0.05		ND(0.004)
Calcium	NNS		97.7
Copper	5		ND(0.004)
Iron	NNS		ND(0.2)
Lead	10		ND(0.002)
Magnesium	NNS		36.4
Mercury	NNS		ND(0.0002)
Potassium	NNS		6.45
Selenium	0.02		ND(0.01)
Sodium	NNS		279
Zinc	10		ND(0.012)
Field Parameters			
pH (s.u.)			7.09
Conductivity (µS/cm)			2,074
Temperature (°F)			79.9
System Status (X indicates operational)			
EWN			X
EWM			X
EWS			X

Notes:

¹ Water Quality Standards for Surface Waters are per Title 18, Ch. 11, Section 101 et. seq.
of the Arizona Administrative Code for agricultural irrigation uses (SRP Grand Canal designation)

Status - Final - data validated by project chemist

mg/L - milligrams per liter

ND() - Not Detected at the reporting limit in parentheses

NNS - No numeric standard

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

Table 4.10

Summary of General Chemistry Analytical Results
SRP Grand Canal Discharge
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

	Surface Water Quality Standards ¹	Frequency: Date: Number: Status:	Annually 9/5/2017 PS-090517-15 Final
General Chemistry (mg/L)			
Alkalinity, Bicarbonate	NNS		215
Alkalinity, as CaCO ₃	NNS		215
Chloride	NNS		319
Fluoride	NNS		0.61
Nitrate (as N)	NNS		6.4
Nitrite (as N)	NNS		ND(0.5)
Orthophosphate	NNS		0.081
Sulfate	NNS		266
Total Dissolved Solids (TDS)	NNS		1,270
Hardness, Carbonate	NNS		394
Field Parameters			
pH (s.u.)			7.09
Conductivity (µS/cm)			2,074
Temperature (°F)			79.9
System Status (X indicates operational)			
EWN			X
EWM			X
EWS			X

Notes:

¹ Water Quality Standards for Surface Waters are per Title 18, Ch. 11, Section 101 et. seq. of the Arizona Administrative Code for agricultural irrigation uses (SRP Grand Canal designation)

Status - Final - data validated by project chemist

mg/L - milligrams per liter

NNS - No numeric standard

ND() - Not Detected at the detection limit in parenthesis

CaCO₃ - Calcium Carbonate

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

Table 4.11

Summary of Boron Analytical Results
SRP Discharge and Grand Canal
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Surface Water Quality Standards ¹	Sample Location: Frequency: Date: Number: Status"	SRP Discharge		SRP Upgradient 470 feet from Discharge		SRP Downgradient 800 feet from Discharge	
		Semi-annual	Semi-annual	Semi-annual	Semi-annual	Semi-annual	Semi-annual
		3/20/2017	9/5/2017	3/20/2017	9/5/2017	3/20/2017	9/5/2017
		PS-032017-12	PS-090517-15	PS-032017-11	PS-090517-16	PS-032017-14	PS-090517-17
		Final	Final	Final	Final	Final	Final
Total Recoverable Metals (mg/L)							
Boron	1	2.49	1.99	0.12	0.12	0.38	0.22
Field Parameters							
pH (s.u.)		7.19	7.09	8.41	8.38	8.06	8.15
Conductivity (µS/cm)		2,132	2,074	459	1,337	650	1,384
Temperature (°F)		77.2	79.9	69.0	82.9	70.0	83.2
System Status (X indicates operational)							
EWN		X	X	X	X	X	X
EWM		X	X	X	X	X	X
EWS		X	X	X	X	X	X

Notes:

¹ Water Quality Standards for Surface Waters are per Title 18, Ch. 11, Section 101 et. seq. of the
 Arizona Administrative Code for agricultural irrigation uses (SRP Grand Canal designation)

Status - Final - data validated by project chemist

mg/L - milligrams per liter

s.u. - standard units

µS/cm - microsiemens per centimeter

°F - degrees Fahrenheit

GHD 013932 (41)

Table 4.12

Summary of Analytical Results
Primary Granular Activated Carbon Adsorber Effluent
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample Location:		GAC Vessel #2				GAC Vessel #4							
Treated	Frequency:	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Groundwater	Date:	9/5/2017	10/3/2017	11/1/2017	12/4/2017	1/4/2017	2/7/2017	3/20/2017	4/5/2017	5/15/2017	6/1/2017	7/6/2017	8/2/2017
Discharge	Number:	PS-090517-02	PS-100317-02	PS-110117-03	PS-120417-02	PS-10417-02	PS-020717-03	PS-32017-02	PS-040517-02	PS-051517-03	PS-060117-02	PS-070617-02	PS-080217-03
Standards	Status:	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM	3.4	3.4	2.8	3.1	4.7	5.1	5.5	3.9	4.1	4.7	3.3	2.4
Chloromethane	NNS	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.5	1.6	1.5	ND(1.0)	1.2	1.0	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7	ND(1.0)	ND(1.0)	1.3	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.1	1.4
cis-1,2-Dichloroethene	70	7.7	9.3	8.8	6.7	4.9	6.8	8.7	9.2	2.8	6.2	8.4	8.5
trans-1,2-Dichloroethene	100	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5	0.63	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	0.81	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichlorofluoromethane	TTHM	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total VOCs		11.7	12.7	12.9	9.8	11.1	14.3	15.7	13.1	8.1	11.9	12.8	12.3
Field Parameters													
pH (s.u.)		7.11	7.04	7	7.11	6.90	7.06	7.14	7.08	7.10	7.14	7.11	7.11
Conductivity (µS/cm)		2,051	2,010	2,060	2,080	2,059	2,105	2,142	2,096	2,086	2,057	2,075	2,065
Temperature (°F)		78.3	77.7	77.3	76.5	75.4	76.6	77.8	76.9	76.9	77.8	78.7	78.7
System Status (X indicates operational)													
Primary Adsorber		A	A	A	B	A	A	A	A	B	B	B	B
EWN		X	X	X	X	X	X	X	X	X	X	X	X
EWM		X	X	X	X	X	X	X	X	X	X	X	X
EWS		X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂													
Ultraviolet oxidation system without H ₂ O ₂													

Table 4.12

Summary of Analytical Results
Primary Granular Activated Carbon Adsorber Effluent
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample Location:		GAC Vessel #5											
Treated Groundwater Discharge Standards	Frequency: Date:	Monthly 1/4/2017	Monthly 2/7/2017	Monthly 3/20/2017	Monthly 4/5/2017	Monthly 5/15/2017	Monthly 6/1/2017	Monthly 7/6/2017	Monthly 8/2/2017	Monthly 9/5/2017	Monthly 10/3/2017	Monthly 11/1/2017	Monthly 12/4/2017
	Number: PS-010417-03	PS-020717-04	PS-32017-03	PS-040517-03	PS-051517-04	PS-060117-03	PS-070617-03	PS-080217-04	PS-090517-03	PS-100317-03	PS-110117-04	PS-120417-03	
	Status:	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM	4.8	4.5	3.8	4.0	3.4	3.8	3.6	3	3.8	3.5	3.1	3.4
Chloromethane	NNS	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS	1.3	1.3	ND(1.0)	ND(1.0)	1.2	1.1	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7	ND(1.0)	ND(1.0)	1.8	1.2	ND(1.0)	ND(1.0)	1	1.4	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
cis-1,2-Dichloroethene	70	13.0	12.9	12.9	13.7	1.9	4.6	11.3	12.2	5.1	10.1	10.3	1.9
trans-1,2-Dichloroethene	100	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5	ND(0.50)	ND(0.50)	0.57	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichlorofluoromethane	TTHM	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total VOCs		19.1	18.7	19.1	18.9	6.5	9.5	15.9	16.6	8.9	13.6	13.4	5.3
Field Parameters													
pH (s.u.)		7.00	7.04	7.18	7.15	7.12	7.37	7.1	7.12	6.58	6.96	7.05	7.06
Conductivity (µS/cm)		2,118	2,099	2,118	2,102	2,091	2,071	2,065	2,068	2,009	2,003	2,048	2,077
Temperature (°F)		75.8	76.6	77.6	76.8	76.7	77.7	78.7	78.9	78.5	77.4	77.5	76.7
System Status (X indicates operational)													
Primary Adsorber		A	A	A	A	B	B	B	B	A	A	A	B
EWN		X	X	X	X	X	X	X	X	X	X	X	X
EWM		X	X	X	X	X	X	X	X	X	X	X	X
EWS		X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂													
Ultraviolet oxidation system without H ₂ O ₂													

Table 4.12

Summary of Analytical Results
Primary Granular Activated Carbon Adsorber Effluent
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample Location:		GAC Vessel #6											
Treated Groundwater Discharge Standards	Frequency: Date:	Monthly 1/4/2017	Monthly 2/7/2017	Monthly 3/20/2017	Monthly 4/5/2017	Monthly 5/15/2017	Monthly 6/1/2017	Monthly 7/6/2017	Monthly 8/2/2017	Monthly 9/5/2017	Monthly 10/3/2017	Monthly 11/1/2017	Monthly 12/4/2017
	Number: PS-010417-04	PS-020717-05	PS-32017-04	PS-040517-04	PS-051517-05	PS-060117-04	PS-070617-04	PS-080217-05	PS-090517-04	PS-100317-04	PS-110117-05	PS-120417-04	
	Status:	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM	3.6	3.5	3.9	2.8	3.2	3.6	2.4	2.3	2.5	2.7	2.5	2.9
Chloromethane	NNS	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7	2.0	1.8	1.9	1.8	1.1	1.7	1.7	2.1	1.6	2.3	2	1.8
cis-1,2-Dichloroethene	70	12.1	12.9	12.4	11.5	8.9	11.9	8	8.9	9.9	11	8.9	10.7
trans-1,2-Dichloroethene	100	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5	0.85	0.99	0.56	2.0 J	ND(0.50)	ND(0.50)	5	8.8	ND(0.50)	ND(0.50)	6.8	ND(0.50)
Trichlorofluoromethane	TTHM	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total VOCs		18.6	19.2	18.8	18.1	13.2	17.2	17.1	22.1	14.0	16.0	20.2	15.4
Field Parameters													
pH (s.u.)		7.09	7.05	7.11	7.19	7.08	7.17	7.06	7.15	7.07	7.06	7.04	7.07
Conductivity (µS/cm)		2,098	2,116	2,110	2,100	2,083	2,080	2,062	2,076	2,057	2,008	2,082	2,070
Temperature (°F)		74.6	76.5	77.5	76.6	76.8	77.8	77.8	78.9	78.3	77.6	77.5	76.5
System Status (X indicates operational)													
Primary Adsorber		A	A	A	A	B	B	B	B	A	A	A	B
EWN		X	X	X	X	X	X	X	X	X	X	X	X
EWM		X	X	X	X	X	X	X	X	X	X	X	X
EWS		X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂													
Ultraviolet oxidation system without H ₂ O ₂													

Table 4.12

Summary of Analytical Results
Primary Granular Activated Carbon Adsorber Effluent
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Sample Location:		GAC Vessel #7				GAC Vessel #8							
Treated Groundwater Discharge Standards	Frequency: Date:	Monthly 9/5/2017	Monthly 10/3/2017	Monthly 11/1/2017	Monthly 12/4/2017	Monthly 1/4/2017	Monthly 2/7/2017	Monthly 3/20/2017	Monthly 4/5/2017	Monthly 5/15/2017	Monthly 6/1/2017	Monthly 7/6/2017	Monthly 8/2/2017
	Number: PS-090517-05	PS-100317-05	PS-110117-06	PS-120417-05	PS-010417-05	PS-020717-06	PS-32017-05	PS-040517-05	PS-051517-06	PS-060117-05	PS-070617-05	PS-080217-06	
	Status:	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final	Final
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromodichloromethane	TTHM	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Bromomethane	TTHM	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Chloroform	TTHM	3.4	3.5	2.7	3.7	4.4	4.2	4.7	3.8	3.3	5.0	3.7	3.1
Chloromethane	NNS	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
1,1-Dichloroethane	NNS	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.4	1.4	1.5	1.1	1.1	1.1	ND(1.0)	ND(1.0)
1,2-Dichloroethane	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1-Dichloroethene	7	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	1.2
cis-1,2-Dichloroethene	70	5.8	6.9	6.5	6.5	3.7	3.6	6.8	6.7	1.3	4.2	7.1	9.5
trans-1,2-Dichloroethene	100	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	5	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Toluene	1,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
1,1,1-Trichloroethane	200	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	5	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	0.69 J	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Trichlorofluoromethane	TTHM	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)	ND(4.0)
Vinyl Chloride	2	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)	ND(0.50)
Xylene	10,000	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Total VOCs		9.2	10.4	9.2	10.2	9.5	9.2	13.0	12.3	5.7	10.3	10.8	13.8
Field Parameters													
pH (s.u.)		7.14	7.00	7.03	7.08	7.11	7.04	6.96	7.15	7.12	7.14	7.09	7.12
Conductivity (µS/cm)		2,052	2,005	2,074	2,064	2,112	2,118	2,200	2,101	2,085	2,073	2,059	2,074
Temperature (°F)		78.4	77.4	77.5	76.7	75.5	76.3	78.9	76.8	76.8	78.0	78.8	79.1
System Status (X indicates operational)													
Primary Adsorber		A	A	A	B	A	A	A	A	B	B	B	B
EWN		X	X	X	X	X	X	X	X	X	X	X	X
EWM		X	X	X	X	X	X	X	X	X	X	X	X
EWS		X	X	X	X	X	X	X	X	X	X	X	X
Ultraviolet oxidation system with H ₂ O ₂													
Ultraviolet oxidation system without H ₂ O ₂													

Notes:

Status - Final - data validated by project chemist
µg/L - micrograms per liter
ND() - Not Detected at the reporting limit in parenthesis
TTHM - Total Trihalomethanes = 100 µg/L

NNS - No numeric standard
s.u. - standard units
µS/cm - microsiemens per centimeter
°F - degrees Fahrenheit

H₂O₂ - hydrogen peroxide
J - Sample results were qualified as estimated due to outlying of surrogate recoveries

Table 4.13

Summary of GAC Changeout Dates
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Ship Date	GAC # ¹	Replacement Quantity (pounds) Regenerated
First Changeout 2017 (4 Sets in Service)		
May 5, 2017	4A	18,000
May 8, 2017	5A	18,000
May 10, 2017	6A	18,000
May 12, 2017	8A	18,000
Total		72,000
Second Changeout 2017 (4 Sets in Service)		
August 18, 2017	4B ²	18,000
August 21, 2017	5B	18,000
August 23, 2017	6B	18,000
August 25, 2017	8B ²	18,000
Total		72,000
Third Changeout 2017 (4 Sets in Service)		
November 23, 2017	2A	18,000
November 27, 2017	5A	18,000
November 29, 2017	6A	18,000
December 1, 2017	7A	18,000
Total		72,000

Notes:

GAC - Granular Activated Carbon

¹ These GAC vessels become secondary GAC vessels after carbon changeout² Carbon from GAC Vessels #4A, #4B, #8A, and #8B was transferred to GAC Vessels #2A, #2B, #7A, and #7B, respectively, in August 2017 to prepare for internal lining repairs.

Table 4.14

Summary of Analytical Results
Discharge to the City of Phoenix Sewer
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Parameter ¹	Units	City of Phoenix Discharge Limitations	: Date: Number:	Quarterly 2/7/2017 PS-020717-01	Quarterly 5/15/2017 PS-051517-01	Quarterly 8/2/2017 PS-080217-01	Quarterly 11/1/2017 PS-110117-01
pH	s.u.	5.0 - 10.5		8.85	8.16	7.39	8.05
Benzene	µg/L	35		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Chloroform	µg/L	2,000		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Tetrachloroethene	µg/L	NA		ND(1.0)	ND(1.0)	ND(1.0)	ND(1.0)
Trichloroethene	µg/L	NA		ND(1.0)	ND(1.0)	3.8	1.7

Notes:

¹ As required by the Industrial Wastewater Discharge Permit

s.u. - standard units

µg/L - micrograms per liter

ND() - Not Detected at the reporting limit in parentheses

NA - Not applicable

Table 7.1

Proposed OU2 GES Area Groundwater Monitoring Well Sampling Frequencies - 2018
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID Monitoring Wells Piezometers	Construction Type	Location	Hydro- stratigraphic Subunit Screened	Current Monitoring (2017)		Proposed Frequency (2018)	Comments
				Water		Water	
				Hydraulic	Quality	Quality	
BC-16	C	32nd Street and Washington Street	SRG	Z	Y	Y	
CRA01	C	I-10 and Roosevelt Street	SRG	Z	Z	Z	
DM509	C	N 30th Place and E Van Buren	BF	Z	Y	Y	
EW03	C	N 30th Place and E Van Buren	SRG/BF	Z	Z	Y	
EW06	C	20th Street and Madison Street	SRG	Z	Z	Z	
EW07	C	20th Street and Fillmore Street	SRG	Z	Z	Z	
EW19-D	C	12th Street and Monroe Street	BF	Z	Z	--	Sampled by OU3 contractor.
EW19-S	C	12th Street and Monroe Street	SRG	Z	Z	--	Went dry in 2015
EW21	C	12th Street and Fillmore Street	SRG	Z	--	--	Went dry in 2015
EW22-D	C	15th Street and Polk Street	BF	Z	Y	Y	No historic VOC detects
EW22-S	C	19th Street, between Adams and Washington Streets	SRG	Z	Y	Y	Sufficient data to establish trend
EWM	E	Van Buren, east of 20th Street, on ADOT ROW	SRG/BF	Z	Z	Z	Sufficient data to establish trend
EWN	E	ADOT ROW	SRG/BF	Z	Z	Z	Sufficient data to establish trend
EWS	E	20th Street north of Washington Street	SRG/BF/BR	Z	Z	Z	Sufficient data to establish trend
EWSPZ1	C	20th Street north of Washington Street	SRG/BF	Z	--	--	Screened across multiple units
NW01	C	24th Street and Roosevelt Street	SRG	Z	Z	Z	
NW02	C	Polk Street, between 19th and 20th Streets	SRG	Z	Y	Y	Center of plume, proximal to NW05-S
NW03	C	Monroe Street, between 19th and 20th Streets	SRG	Z	Z	Z	
NW04-S	C	Patricio, between Polk and Van Buren	SRG	Z	Z	Z	
NW04-D	C	Patricio, between Polk and Van Buren	BF	Z	Z	Z	
NW05-S	C	19th Street, between Van Buren and Polk	SRG	Z	Z	Z	
NW06-S	C	19th Street, between Adams and Washington Streets	SRG	Z	Z	Z	Center of plume, upgradient of capture
NW06-D	C	19th Street, between Adams and Washington Streets	BF	Z	Z	Z	Center of plume, upgradient of capture
NW07-S	C	18th Street, between Madison and Jefferson Streets	SRG	Z	Z	Z	
NW07-M	C	18th Street, between Madison and Jefferson Streets	SRG	Z	Z	Z	
NW07-D	C	18th Street, between Madison and Jefferson Streets	BF	Z	Z	Z	
NW08-S	C	20th Street and Adams Street	SRG	Z	Y	Y	Center of plume, upgradient of the GES
NW08-M	C	20th Street and Adams Street	BF	Z	Y	Y	Center of plume, upgradient of the GES
NW08-D	C	20th Street and Adams Street	BF	Z	Y	Y	Center of plume, upgradient of the GES
NW09-M	C	20th Street, south of UPRR track	SRG	Z	Z	Y	Outside plume boundary
NW09-D	C	20th Street, south of UPRR track	BF	Z	Z	Z	
NW09-D2	C	20th Street, south of UPRR track	BF	Z	Z	Z	Outside plume boundary
NW10-D	C	Sky Harbor Circle and 20th Street	BF	Z	Y	Y	Outside plume boundary
NW11-M	C	20th Street and Madison Street	SRG	Z	Z	Z	
NW11-D	C	20th Street and Madison Street	BF	Z	Z	Z	
NW12-D	C	Villa Street and 20th Street	BF	Z	Y	Y	Outside plume boundary
NW13-M	N	South of UPRR track and west of 19th Street	SRG	Z	Z	Y	Outside plume boundary
NW13-D	N	South of UPRR track and west of 19th Street	BF	Z	Z	Z	
NW14-M	N	19th Street and Jackson Street	SRG	Z	Z	Y	Outside plume boundary
NW14-D	N	19th Street and Jackson Street	BF	Z	Z	Z	
NW15-S	C	Jackson Street east of 22nd Street	Colluvium	Z	Z	Y	
NW16-M	N	20th Street south of Washington Street	SRG	Z	Z	Y	Center of the plume
NW16-D	N	20th Street south of Washington Street	BF	Z	Z	Y	Center of the plume
NW17-S	C	Monroe Street west of 19th Street	Colluvium	Z	Z	Z	Not part of the alluvial aquifer
NW18-S	C	Adams Street east of 18th Street	SRG	Z	Z	Z	Center of the plume
NW18-M	C	Adams Street east of 18th Street	Colluvium	Z	Z	Z	Center of the plume
NW19-M	C	Harrison Street and 24th Street	SRG	Z	Z	Z	
NW19-D	C	Harrison Street and 24th Street	BF	Z	Z	Z	
NW21-S	C	24th Street and Fillmore Street	SRG	Z	--	Y	Center of the plume
NW22-S	C	21st Place and Van Buren Street	SRG	Z	Y	Y	Center of the plume
NW22-D	C	21st Place and Van Buren Street	BF	Z	Y	Y	Center of the plume
NW23-S	C	23rd Street & Madison Street	SRG	Z	Y	Y	Center of the plume
NW23-D	C	23rd Street & Madison Street	BF	Z	Y	Y	Center of the plume
NW24-S	C	28th Street south of Fillmore Street	SRG	Z	Y	Y	Center of the plume
NW24-D	C	28th Street south of Fillmore Street	BF	Z	Y	Y	Center of the plume
NW25-S	C	33rd Street and Garfield Street	SRG	Z	Y	Y	Center of the plume
OU312-M	C	15th Street and Adams Street	SRG	Z	--	--	Sampled by OU3 contractor

Table 7.1

Proposed OU2 GES Area Groundwater Monitoring Well Sampling Frequencies - 2018
52nd Street Superfund Site, OU2 Area
Phoenix, Arizona

Well ID Monitoring Wells Piezometers	Construction Type	Location	Hydro- stratigraphic Subunit Screened	Current Monitoring (2017)		Proposed Frequency (2018)	Comments
				Water Hydraulic Quality		Water Quality	
OU312-D	C	15th Street and Adams Street	BF	Z	--	--	Sampled by OU3 contractor
OU313-M	C	15th Street and Polk Street	SRG	Z	--	--	Sampled by OU3 contractor
OU313-D	C	15th Street and Polk Street	SRG	Z	--	--	Sampled by OU3 contractor
OU314-M	C	McKinley Street and 16th Street	SRG	Z	--	--	Sampled by OU3 contractor
OU314-D	C	McKinley Street and 16th Street	BF	Z	--	--	Sampled by OU3 contractor
PZ01-A	C	111 N 32nd Street	SRG	Z	--	--	Well went dry in 2014
PZ01-B	C	111 N 32nd Street	BF	Z	Y	Y	
PZ01-S	N	I-10 and Polk Street	SRG	Z	--	--	
PZ01-D	N	I-10 and Polk Street	BR	Z	--	--	
PZ02-S	N	I-10 and Polk Street	SRG	Z	--	--	
PZ02-D	N	I-10 and Polk Street	BR	Z	--	--	
TEW01	C	I-10 and Polk Street	SRG	Z	--	--	

Notes:

C - Conventional Well

E - Extraction Well

N - Nested Well

SRG - Salt River Gravels

BF - Interbedded sands and silt/clays (Basin Fill)

BR - Bedrock

X - Quarterly

Y - Annual (September)

Z - Semi-Annual (March/September)

S - Shallow

D - Deep

M - Middle

"--" - not sampled

ADOT ROW - Arizona Department of Transportation right-of-way

GES - Groundwater Extraction System

UPRR - Union Pacific Railroad

Appendices

Appendix A

Groundwater/Process Analytical Reports, Field Sample Keys, and Forms

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD8565

Sampling Date: 09/05/17

Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
Phoenix, AZ 85016
manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: 64



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD8565

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD8565-1	09/05/17	10:20	09/06/17	AQ	Ground Water	PS-090517-MM-01
TD8565-2	09/05/17	10:30	09/06/17	AQ	Ground Water	PS-090517-MM-02
TD8565-3	09/05/17	10:35	09/06/17	AQ	Ground Water	PS-090517-MM-03
TD8565-4	09/05/17	10:40	09/06/17	AQ	Ground Water	PS-090517-MM-04
TD8565-5	09/05/17	10:45	09/06/17	AQ	Ground Water	PS-090517-MM-05
TD8565-6	09/05/17	10:50	09/06/17	AQ	Ground Water	PS-090517-MM-06
TD8565-7	09/05/17	10:53	09/06/17	AQ	Ground Water	PS-090517-MM-07
TD8565-8	09/05/17	11:00	09/06/17	AQ	Ground Water	PS-090517-MM-08
TD8565-9	09/05/17	11:30	09/06/17	AQ	Ground Water	PS-090517-MM-09
TD8565-10	09/05/17	11:45	09/06/17	AQ	Ground Water	PS-090517-MM-10
TD8565-11	09/05/17	12:15	09/06/17	AQ	Ground Water	PS-090517-MM-11
TD8565-12	09/05/17	12:30	09/06/17	AQ	Ground Water	PS-090517-MM-12
TD8565-13	09/05/17	13:00	09/06/17	AQ	Ground Water	PS-090517-MM-13



Sample Summary
(continued)

GHD Services Inc.

Job No: TD8565

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD8565-14	09/05/17	00:00	09/06/17	AQ	Trip Blank Water	TRIP BLANK-14
TD8565-15	09/05/17	12:18	09/06/17	AQ	Ground Water	PS-090517-MM-15
TD8565-16	09/05/17	12:05	09/06/17	AQ	Ground Water	PS-090517-MM-16
TD8565-17	09/05/17	12:40	09/06/17	AQ	Ground Water	PS-090517-MM-17

Summary of Hits

Page 1 of 3

Job Number: TD8565
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/05/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

TD8565-1 PS-090517-MM-01

Chloroform	1.9	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	5.5	1.0		ug/l	SW846 8260C
Tetrachloroethylene	2.0	1.0		ug/l	SW846 8260C
Trichloroethylene	29.5	0.50		ug/l	SW846 8260C
Calcium ^a	92600	100		ug/l	EPA 200.7
Magnesium ^a	34900	100		ug/l	EPA 200.7
Alkalinity, Bicarbonate	248	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3	248	5.0		mg/l	SM 2320B-2011
Hardness, Total ^b	375	0.66		mg/l	SM2340 B-11
Solids, Total Dissolved	1270	10		mg/l	SM 2540C-2011

TD8565-2 PS-090517-MM-02

Chloroform	3.4	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	7.7	1.0		ug/l	SW846 8260C
Trichloroethylene	0.63	0.50		ug/l	SW846 8260C

TD8565-3 PS-090517-MM-03

Chloroform	3.8	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	5.1	1.0		ug/l	SW846 8260C

TD8565-4 PS-090517-MM-04

Chloroform	2.5	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	1.6	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	9.9	1.0		ug/l	SW846 8260C

TD8565-5 PS-090517-MM-05

Chloroform	3.4	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	5.8	1.0		ug/l	SW846 8260C

TD8565-6 PS-090517-MM-06

No hits reported in this sample.

TD8565-7 PS-090517-MM-07

No hits reported in this sample.

Summary of Hits

Job Number: TD8565
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/05/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

TD8565-8 PS-090517-MM-08

Chloroform	3.6	1.0		ug/l	SW846 8260C
1,1-Dichloroethane	1.5	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	3.3	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	9.8	1.0		ug/l	SW846 8260C
Tetrachloroethylene	4.3	1.0		ug/l	SW846 8260C
Trichloroethylene	45.4	0.50		ug/l	SW846 8260C

TD8565-9 PS-090517-MM-09

Chloroform	1.9	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	1.3	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	7.2	1.0		ug/l	SW846 8260C
Tetrachloroethylene	1.8	1.0		ug/l	SW846 8260C
Trichloroethylene	38.7	0.50		ug/l	SW846 8260C

TD8565-10 PS-090517-MM-10

Chloroform	1.1	1.0		ug/l	SW846 8260C
Tetrachloroethylene	1.1	1.0		ug/l	SW846 8260C
Trichloroethylene	7.7	0.50		ug/l	SW846 8260C

TD8565-11 PS-090517-MM-11

No hits reported in this sample.

TD8565-12 PS-090517-MM-12

No hits reported in this sample.

TD8565-13 PS-090517-MM-13

No hits reported in this sample.

TD8565-14 TRIP BLANK-14

No hits reported in this sample.

TD8565-15 PS-090517-MM-15

Barium ^c	51.1	10		ug/l	EPA 200.8
Boron ^a	1990	100		ug/l	EPA 200.7
Calcium ^a	97700	100		ug/l	EPA 200.7
Magnesium ^a	36400	100		ug/l	EPA 200.7

Summary of Hits

Job Number: TD8565
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/05/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Potassium ^a		6450	500		ug/l	EPA 200.7
Sodium ^a		279000	500		ug/l	EPA 200.7
Alkalinity, Bicarbonate		215	5.0		mg/l	SM 4500 CO2 D
Alkalinity, Total as CaCO3		215	5.0		mg/l	SM 2320B-2011
Chloride		319	25		mg/l	EPA 300
Fluoride		0.61	0.50		mg/l	EPA 300
Hardness, Total ^b		394	0.66		mg/l	SM2340 B-11
Nitrogen, Nitrate		6.4	0.50		mg/l	EPA 300
Phosphate, Ortho		0.081	0.020		mg/l	SM 4500PE-2011
Solids, Total Dissolved		1270	10		mg/l	SM 2540C-2011
Sulfate		266	30		mg/l	EPA 300
TD8565-16 PS-090517-MM-16						
Boron ^a		119	100		ug/l	EPA 200.7
TD8565-17 PS-090517-MM-17						
Boron ^a		217	100		ug/l	EPA 200.7

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

(b) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

(c) AZ:D1 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	PS-090517-MM-01	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-1	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239714.D	1	09/07/17 23:08	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.9	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	5.5	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.0	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	29.5	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		72-122%
17060-07-0	1,2-Dichloroethane-D4	97%		68-124%
2037-26-5	Toluene-D8	104%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-01	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-1	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Calcium ^a	92600	100	ug/l	1	09/08/17	09/08/17 ALA	EPA 200.7 ¹	EPA 200.7 ²
Magnesium ^a	34900	100	ug/l	1	09/08/17	09/08/17 ALA	EPA 200.7 ¹	EPA 200.7 ²

(1) Instrument QC Batch: L:MA9061

(2) Prep QC Batch: L:MP9078

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PS-090517-MM-01	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-1	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	248	5.0	mg/l	1	09/06/17 14:39	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/06/17 14:39	PA	SM18 2320B
Alkalinity, Total as CaCO3	248	5.0	mg/l	1	09/06/17 14:39	PA	SM 2320B-2011
Hardness, Total ^a	375	0.66	mg/l	1	09/08/17 22:39	ALA	SM2340 B-11
Solids, Total Dissolved	1270	10	mg/l	1	09/06/17	BG	SM 2540C-2011

(a) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PS-090517-MM-02	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-2	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239715.D	1	09/07/17 23:35	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.4	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	7.7	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	0.63	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		72-122%
17060-07-0	1,2-Dichloroethane-D4	101%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-03	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-3	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239716.D	1	09/08/17 00:01	EM	n/a	n/a	VX3332
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.8	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	5.1	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	98%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-04	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-4	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239717.D	1	09/08/17 00:28	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.5	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.6	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	9.9	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		72-122%
17060-07-0	1,2-Dichloroethane-D4	100%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-05	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-5	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239718.D	1	09/08/17 00:54	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.4	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	5.8	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	99%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-06	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-6	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239719.D	1	09/08/17 01:21	EM	n/a	n/a	VX3332
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		72-122%
17060-07-0	1,2-Dichloroethane-D4	98%		68-124%
2037-26-5	Toluene-D8	104%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-07	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-7	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239720.D	1	09/08/17 01:47	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	99%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-08	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-8	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239721.D	1	09/08/17 02:14	EM	n/a	n/a	VX3332
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.6	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.5	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	3.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	9.8	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	4.3	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	45.4	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	101%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-09	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-9	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239722.D	1	09/08/17 02:40	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.9	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	7.2	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.8	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	38.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	100%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-10	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-10	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239723.D	1	09/08/17 03:07	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.1	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.1	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	7.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		72-122%
17060-07-0	1,2-Dichloroethane-D4	97%		68-124%
2037-26-5	Toluene-D8	104%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-11	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-11	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239724.D	1	09/08/17 03:33	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%		72-122%
17060-07-0	1,2-Dichloroethane-D4	98%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-12	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-12	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239725.D	1	09/08/17 04:00	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	PS-090517-MM-13	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-13	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239726.D	1	09/08/17 04:26	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	100%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK-14	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-14	Date Received:	09/06/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01239713.D	1	09/07/17 22:42	EM	n/a	n/a	VX3332
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%		72-122%
17060-07-0	1,2-Dichloroethane-D4	98%		68-124%
2037-26-5	Toluene-D8	104%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: PS-090517-MM-15**Lab Sample ID:** TD8565-15**Matrix:** AQ - Ground Water**Date Sampled:** 09/05/17**Date Received:** 09/06/17**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ**Total Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic ^a	< 8.0	8.0	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Barium ^a	51.1	10	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Boron ^b	1990	100	ug/l	1	09/08/17	09/08/17	ALA EPA 200.7 ²	EPA 200.7 ⁴
Cadmium ^a	< 4.0	4.0	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Calcium ^b	97700	100	ug/l	1	09/08/17	09/08/17	ALA EPA 200.7 ²	EPA 200.7 ⁴
Copper ^a	< 4.0	4.0	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Iron ^a	< 200	200	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Lead ^a	< 2.0	2.0	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Magnesium ^b	36400	100	ug/l	1	09/08/17	09/08/17	ALA EPA 200.7 ²	EPA 200.7 ⁴
Mercury ^b	< 0.20	0.20	ug/l	1	09/08/17	09/08/17	ALA EPA 245.1 ³	EPA 245.1 ⁶
Potassium ^b	6450	500	ug/l	1	09/08/17	09/08/17	ALA EPA 200.7 ²	EPA 200.7 ⁴
Selenium ^a	< 10	10	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵
Sodium ^b	279000	500	ug/l	1	09/08/17	09/08/17	ALA EPA 200.7 ²	EPA 200.7 ⁴
Zinc ^a	< 12	12	ug/l	2	09/08/17	09/08/17	ALA EPA 200.8 ¹	EPA 200.8 ⁵

(1) Instrument QC Batch: L:MA9054

(2) Instrument QC Batch: L:MA9061

(3) Instrument QC Batch: L:MA9063

(4) Prep QC Batch: L:MP9078

(5) Prep QC Batch: L:MP9082

(6) Prep QC Batch: L:MP9086

(a) AZ:D1 Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

(b) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID: PS-090517-MM-15**Lab Sample ID:** TD8565-15**Matrix:** AQ - Ground Water**Date Sampled:** 09/05/17**Date Received:** 09/06/17**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate	215	5.0	mg/l	1	09/06/17 14:39	PA	SM 4500 CO2 D
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	09/06/17 14:39	PA	SM18 2320B
Alkalinity, Total as CaCO3	215	5.0	mg/l	1	09/06/17 14:39	PA	SM 2320B-2011
Chloride	319	25	mg/l	50	09/06/17 14:07	SM	EPA 300
Fluoride	0.61	0.50	mg/l	1	09/06/17 13:20	SM	EPA 300
Hardness, Total ^a	394	0.66	mg/l	1	09/08/17 22:44	ALA	SM2340 B-11
Nitrogen, Nitrate	6.4	0.50	mg/l	1	09/06/17 13:20	SM	EPA 300
Nitrogen, Nitrite	< 0.50	0.50	mg/l	1	09/06/17 13:20	SM	EPA 300
Phosphate, Ortho	0.081	0.020	mg/l	1	09/06/17 16:40	BG	SM 4500PE-2011
Solids, Total Dissolved	1270	10	mg/l	1	09/06/17	BG	SM 2540C-2011
Sulfate	266	30	mg/l	50	09/06/17 14:07	SM	EPA 300

(a) Calculated as: (Calcium * 2.497) + (Magnesium * 4.118)

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PS-090517-MM-16	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-16	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Boron ^a	119	100	ug/l	1	09/08/17	09/08/17 ALA	EPA 200.7 ¹	EPA 200.7 ²

(1) Instrument QC Batch: L:MA9061

(2) Prep QC Batch: L:MP9078

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Report of Analysis

Client Sample ID:	PS-090517-MM-17	Date Sampled:	09/05/17
Lab Sample ID:	TD8565-17	Date Received:	09/06/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Boron ^a	217	100	ug/l	1	09/08/17	09/08/17 ALA	EPA 200.7 ¹	EPA 200.7 ²

(1) Instrument QC Batch: L:MA9061
(2) Prep QC Batch: L:MP9078

(a) Analysis performed at SGS Accutest, Lafayette, LA. Cert# AZ0805

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD8565
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
D1	Sample required dilution due to matrix.
Q9	Insufficient sample received to meet method QC requirements.

4.1
4

PHOENIX

ACCUTEST

CHAIN OF CUSTODY

PAGE 1 OF 2

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking # 7701 8801 8064	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest Job # TD8565

Client / Reporting Information				Project Information												Requested Analyses												Matrix Codes
Company Name GHD				Project Name OU2																								
Street Address 4747 N 22nd St. #200				Street 12N 20th St.																								
City State Zip Phoenix AZ 85016				City State Phoenix AZ				Billing Information (if different from Report to)																				
Project Contact M. Praschke				Project # 013932-131				Company Name																				
Phone # 602-214-7200				Client Purchase Order #				Street Address																				
Fax #				City State Zip																								
Sampler(s) Name(s) Mike McNeil				Phone # 702-4965				Project Manager Manfred Praschke																				
SGS Accutest Sample #				Collection																								
Field ID / Point of Collection				Number of preserved Bottles																								
Date				Time																								
Sampled By				Matrix																								
# of bottles				HCl NaOH Zn/HCl HNO3 H2SO4 NONE DI Water H2O2 TSP NH4OH ENCORE OTHER																								
1 PS-090517-MM-01				9/5/17 1020 MMC GW 6 X X																								
2				02 1030 3 X																								
3				03 1035 X																								
4				04 1040 X																								
5				05 1045 X																								
6				06 1050 X																								
7				07 1053 X																								
8				08 1100 X																								
9				09 1130 X																								
10				10 1145 X																								
11				11 1215 X																								
12				12 1230 X																								
Turnaround Time (Business days)				Data Deliverable Information																								
Standard				Comments / Special Instructions																								
<input checked="" type="checkbox"/> 5 Day RUSH																												
<input type="checkbox"/> 4 Day RUSH																												
<input type="checkbox"/> 3 Day RUSH																												
<input type="checkbox"/> 2 Day RUSH																												
<input type="checkbox"/> 1 Day EMERGENCY																												
Emergency & Rush T/A data available VIA Lablink																												
Approved By (SGS Accutest PM): / Date:				Commercial "A" (Level 1) <input type="checkbox"/> TRRP																								
				Commercial "B" (Level 2) <input type="checkbox"/> EDD Format																								
				FULT1 (Level 3+4) <input type="checkbox"/> Other																								
				REDT1 (Level 3+4) <input type="checkbox"/>																								
				Commercial "C" <input type="checkbox"/>																								
Form: SM021-0				Commercial "A" = Results Only																								
				Commercial "B" = Results + QC Summary																								
				Commercial "C" = Results + QC & Surrogate Summary																								
Sample Custody must be documented below each time samples change possession, including courier delivery.																												
Relinquished by Sampler: Mike McNeil				Relinquished By: Corey Conn																								
Date Time: 9/5/17 1530				Date Time: 9/5/17 1620																								
Relinquished by: FedEx				Relinquished By: 2 FedEx																								
Date Time: 10/10/17				Date Time:																								
Relinquished by:				Relinquished By:																								
Date Time:				Date Time:																								
Relinquished by:				Relinquished By:																								
Date Time:				Date Time:																								
Custody Seal #				Intact <input checked="" type="checkbox"/> Not intact <input type="checkbox"/>																								
Preserved where applicable				On Ice <input checked="" type="checkbox"/> Cooler Temp: 2.9																								

TD8565: Chain of Custody

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SGS

31 of 64
ACCUTEST
TD8565

4.2

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking # 7701 8801 8064						Bottle Order Control #															
SGS Accutest Quote #						SGS Accutest Job # TD8865															
Requester Analyses												Matrix Codes									
<p><i>826013</i></p> <p><i>BORON</i></p> <p><i>MIXTURE TOTAL DISS</i></p> <p><i>EPA 200.7/200.9</i></p> <p><i>CHEM CLEAN</i></p> <p><i>F=BA 30E-E</i></p> <p><i>23408 / 2340C</i></p> <p><i>2330 B</i></p> <p><i>Empty, 218-7 NO please dispose</i></p>												DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL- Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank									
												LAB USE ONLY									
X																					
X																					
			X																		
			X																		
				X																	
					X																
						X															
							X														
								X													
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										X											
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												X									
													X								
														X							
															X						
																X					
																	X				
Comments / Special Instructions																					
Shipping Summary																					
Including courier delivery.																					
										Received By: 2 Fed Ex				Date Time:							
										Received By: 4				Date Time:							
Intact										Preserved where applicable				On Ice				Cooler Temp. 2.9			
Not intact																					

4.2

TD8565: Chain of Custody

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SGS
ACCUTEST

COOLER TEMP FORM

TC# TD8565

Delivered by (circle one):

(FedEx) UPS

ALGC Driver

Client

Date:

9-6-17

Client:

GHD

Cooler Number:

509

0.0

29

Thermometer ID:

CF, °C

Corrected Temp, °C

ORIGIN ID: MSCA (480) 275-8831
ASHLEY L. LOOMIS
ACCUTEST SERVICE CENTER
ACCUTEST UNIVERSITY DR
SUITE 140
TEMPE AZ 85281
UNITED STATES US

SHIP DATE: 09SEP17
ACT WGT: 43.00 LB
CAG: 1046557/NET3020
DIMS: 24x26x18 IN
BILL RECIPIENT

TO SAMPLE RECEIVING

ACCUTEST LABORATORIES

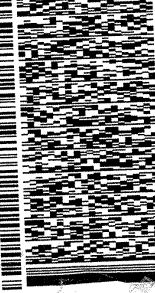
10165 HARWIN DR.

SUITE 150

HOUSTON TX 77071

(713) 271-4700 REF: GHD

DEPT:



FedEx
Express



WED - 06 SEP 10:30A

PRIORITY OVERNIGHT

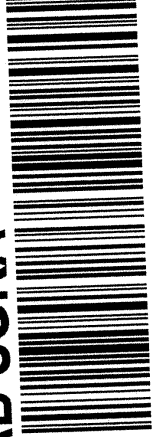
DSR

77071

IAH

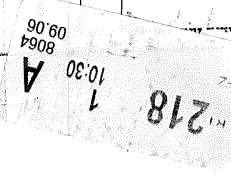
AB SGRA

TX-US



SGS

Custody St



1/24/2016

SGS Accutest Sample Receipt Summary

Page 1 of 4

Job Number: TD8565 Client: GHD Project: OU2
 Date / Time Received: 9/6/2017 10:10:00 AM Delivery Method: Airbill #'s: 770188018064
 No. Coolers: 1 Therm ID: IR9; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (2.9/2.9);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation	<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Sample Integrity - Documentation	<u>Y or N</u>		
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition	<u>Y or N</u>		
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions	<u>Y or N</u>	<u>N/A</u>	
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD8565: Chain of Custody

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Sample Receipt Log

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Job #: TD8565

Date / Time Received: 9/6/2017 10:10:00 AM 10:10:

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD8565-1	250ml	1	SUB	HNO3	pH < 2	IR9	2.9	0	2.9
1	TD8565-1	250ml	2	3J	N/P	Note #2 - Preservative check not applicable.	IR9	2.9	0	2.9
1	TD8565-1	250ml	3	3J	N/P	Note #2 - Preservative check not applicable.	IR9	2.9	0	2.9
1	TD8565-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9

TD8565: Chain of Custody

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Sample Receipt Log

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Job #: TD8565

Date / Time Received: 9/6/2017 10:10:00 AM 10:10:

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD8565-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-8	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-9	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-9	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-9	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-11	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-12	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-12	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-12	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-13	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-13	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-13	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-14	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-14	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	2.9	0	2.9
1	TD8565-15	250ml	1	3J	N/P	Note #2 - Preservative check not applicable.	IR9	2.9	0	2.9
1	TD8565-15	250ml	2	1K	H2SO4	pH < 2	IR9	2.9	0	2.9

TD8565: Chain of Custody

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Sample Receipt Log

Page 4 of 4

Job #: TD8565

Date / Time Received: 9/6/2017 10:10:00 AM 10:10:

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD8565-15	250ml	3	SUB	HNO3	pH < 2	IR9	2.9	0	2.9
1	TD8565-16	250ml	1	SUB	HNO3	pH < 2	IR9	2.9	0	2.9
1	TD8565-17	250ml	1	SUB	HNO3	pH < 2	IR9	2.9	0	2.9

TD8565: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD8565

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3332-MB	X01239712.D	1	09/07/17	EM	n/a	n/a	VX3332

The QC reported here applies to the following samples:

Method: SW846 8260C

TD8565-1, TD8565-2, TD8565-3, TD8565-4, TD8565-5, TD8565-6, TD8565-7, TD8565-8, TD8565-9, TD8565-10, TD8565-11, TD8565-12, TD8565-13, TD8565-14

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	91% 72-122%
17060-07-0	1,2-Dichloroethane-D4	97% 68-124%
2037-26-5	Toluene-D8	104% 80-119%
460-00-4	4-Bromofluorobenzene	98% 72-126%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD8565

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3332-BS	X01239709.D	1	09/07/17	EM	n/a	n/a	VX3332
VX3332-BSD ^a	X01239710.D	1	09/07/17	EM	n/a	n/a	VX3332

The QC reported here applies to the following samples:

Method: SW846 8260C

TD8565-1, TD8565-2, TD8565-3, TD8565-4, TD8565-5, TD8565-6, TD8565-7, TD8565-8, TD8565-9, TD8565-10, TD8565-11, TD8565-12, TD8565-13, TD8565-14

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	22.5	90	24.0	96	6	68-119/30
75-27-4	Bromodichloromethane	25	23.0	92	24.8	99	8	72-118/30
67-66-3	Chloroform	25	21.2	85	22.2	89	5	73-122/30
75-34-3	1,1-Dichloroethane	25	23.1	92	24.6	98	6	72-121/30
75-35-4	1,1-Dichloroethylene	25	23.2	93	25.4	102	9	67-140/30
107-06-2	1,2-Dichloroethane	25	22.3	89	23.7	95	6	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	21.7	87	23.1	92	6	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	23.1	92	24.8	99	7	68-124/30
74-83-9	Methyl bromide	25	23.1	92	24.4	98	5	53-138/30
74-87-3	Methyl chloride	25	18.1	72	19.7	79	8	50-145/30
71-55-6	1,1,1-Trichloroethane	25	23.4	94	24.6	98	5	72-129/30
127-18-4	Tetrachloroethylene	25	24.0	96	25.5	102	6	72-132/30
108-88-3	Toluene	25	22.0	88	23.6	94	7	73-119/30
79-01-6	Trichloroethylene	25	23.2	93	24.9	100	7	73-121/30
75-69-4	Trichlorofluoromethane	25	22.6	90	24.5	98	8	46-152/30
75-01-4	Vinyl chloride	25	19.4	78	20.2	81	4	54-126/30
1330-20-7	Xylene (total)	75	69.3	92	73.4	98	6	74-119/30
	m,p-Xylene	50	46.7	93	49.4	99	6	74-119/30
95-47-6	o-Xylene	25	22.6	90	24.0	96	6	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	94%	72-122%
17060-07-0	1,2-Dichloroethane-D4	97%	99%	68-124%
2037-26-5	Toluene-D8	101%	101%	80-119%
460-00-4	4-Bromofluorobenzene	100%	100%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD8565
Account: CRAAZP - GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate	GN84320	5.0	2.0	mg/l				
Alkalinity, Carbonate	GN84321	5.0	0.0	mg/l				
Alkalinity, Total as CaCO ₃	GN84319	5.0	0.0	mg/l	100	93.0	93.0	90-100%
Alkalinity, Total as CaCO ₃	GN84319			mg/l	100	93.0	93.0	90-100%
Chloride	GP43966/GN84333	0.50	0.0	mg/l	10	9.83	98.3	90-110%
Fluoride	GP43966/GN84333	0.50	0.0	mg/l	10	9.87	98.7	90-110%
Nitrogen, Nitrate	GP43966/GN84333	0.50	0.0	mg/l	10	9.67	96.7	90-110%
Nitrogen, Nitrite	GP43966/GN84333	0.50	0.0	mg/l	10	9.99	99.9	90-110%
Phosphate, Ortho	GP43961/GN84326	0.020	0.0	mg/l	0.4	0.41	102.0	91-108%
Solids, Total Dissolved	GN84307	10	0.0	mg/l	500	496	99.2	88-110%
Sulfate	GP43966/GN84333	0.60	0.0	mg/l	10	10.1	101.0	90-110%

Associated Samples:

Batch GN84307: TD8565-1, TD8565-15
Batch GN84319: TD8565-1, TD8565-15
Batch GN84320: TD8565-1, TD8565-15
Batch GN84321: TD8565-1, TD8565-15
Batch GP43961: TD8565-15
Batch GP43966: TD8565-15
(*) Outside of QC limits

6.1
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DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD8565
Account: CRAAZP - GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP43966/GN84333	TD8565-15	mg/l	319	317	0.6	0-20%
Fluoride	GP43966/GN84333	TD8565-15	mg/l	0.61	0.62	1.6	0-20%
Nitrogen, Nitrate	GP43966/GN84333	TD8565-15	mg/l	6.4	6.1	4.8	0-20%
Nitrogen, Nitrite	GP43966/GN84333	TD8565-15	mg/l	0.0	0.0	0.0	0-20%
Phosphate, Ortho	GP43961/GN84326	TD8577-1	mg/l	7.6	7.7	1.5	0-20%
Solids, Total Dissolved	GN84307	TD8481-1	mg/l	2250	2240	0.4	0-5%
Sulfate	GP43966/GN84333	TD8565-15	mg/l	266	262	1.5	0-20%

Associated Samples:

Batch GN84307: TD8565-1, TD8565-15

Batch GP43961: TD8565-15

Batch GP43966: TD8565-15

(*) Outside of QC limits

6.2

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MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TD8565
Account: CRAAZP - GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP43966/GN84333	TD8565-15	mg/l	319	500	894	115.0	80-120%
Fluoride	GP43966/GN84333	TD8565-15	mg/l	0.61	10	11.5	108.9	80-120%
Nitrogen, Nitrate	GP43966/GN84333	TD8565-15	mg/l	6.4	10	15.9	95.0	80-120%
Nitrogen, Nitrite	GP43966/GN84333	TD8565-15	mg/l	0.0	10	10.0	100.0	80-130%
Phosphate, Ortho	GP43961/GN84326	TD8577-1	mg/l	7.6	32.0	38.8	97.6	83-108%
Sulfate	GP43966/GN84333	TD8565-15	mg/l	266	500	766	100.0	80-120%

Associated Samples:

Batch GP43961: TD8565-15

Batch GP43966: TD8565-15

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits



Misc. Forms

Custody Documents and Other Forms

(SGS Accutest Lafayette)

Includes the following where applicable:

- Chain of Custody

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.sus.com

[illegible]

7.1

TD8565: Chain of Custody
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SGS Accutest Lafayette

Date / Time: 9/6/2017 1:11:34 PM
 CSR: ANITAP
 Job #: TD8565
 Client Project: 52nd Street Superfund Site - OU2 Area, Phoenix, A
 Deliverable: COMMB
 TAT: Due 9/13/2017

Sub Lab: Accutest Gulf Coast Louisiana
 Address: 500 Ambassador Caffery Prkwy
 City: Scott
 State: LA Zip: 70583
 Contact: Sample Receiving
 Phone: 800-304-5227

SGS Accutest Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
<u>TD8565-1</u>	<u>PS-090517-MM-01</u>	<u>CA.MG.</u>	<u>3J.SUB.VR.</u>		<u>9/5/2017</u>	<u>10:20:00 AM</u>	
<u>TD8565-15</u>	<u>PS-090517-MM-15</u>	<u>ASMS.B.BAMS.CA.CDMS.CUMS.</u> <u>FEMS.HG.K.MG.NA.PBMS.SEMS.</u> <u>ZNMS.</u>	<u>1K.3J.SUB.</u>		<u>9/5/2017</u>	<u>12:18:00 PM</u>	
<u>TD8565-15F</u>	<u>PS-090517-MM-15</u>	<u>CA.FILTERMET.MN.</u>			<u>9/5/2017</u>	<u>12:18:00 PM</u>	
<u>TD8565-16</u>	<u>PS-090517-MM-16</u>	<u>B.</u>	<u>SUB.</u>		<u>9/5/2017</u>	<u>12:05:00 PM</u>	
<u>TD8565-17</u>	<u>PS-090517-MM-17</u>	<u>B.</u>	<u>SUB.</u>		<u>9/5/2017</u>	<u>12:40:00 PM</u>	

Comments:

Sample Management Receipt:

Date:

1 = 250 ml nitric 3WZ

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TD8565: Chain of Custody

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SGS Accutest Sample Receipt Summary

Job Number: TD8565

Client: SGS (TX)

Project: SUPERFUND SITE

Date / Time Received: 9/8/2017 7:30:00 AM

Delivery Method: Accutest Courier

Airbill #'s: _____

Cooler Temps (Initial/Adjusted): #1: (1.5/1.5); DV439

Cooler Security

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Thermometer ID:	<u>DV439;</u>		
3. Cooler media:	<u>Ice (direct contact)</u>		
4. No. Coolers:	<u>1</u>		

Quality Control Preservation

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Sample Integrity - Documentation

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Sample Integrity - Condition

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	<u>Intact</u>		

Sample Integrity - Instructions

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD8565: Chain of Custody

Page 3 of 3

Metals Analysis

QC Data Summaries

(SGS Accutest Lafayette)

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD8565
Account: ALGC - SGS Accutest Gulf Coast
Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9078
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 09/08/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	14	24		
Antimony	6.0	1.4	3.3		
Arsenic	10	1.9	3.2		
Barium	10	.21	.9		
Beryllium	4.0	.05	.8		
Boron	100	.95	3.7	1.5	<100
Cadmium	5.0	.13	.6		
Calcium	100	5.1	11	-9.5	<100
Chromium	10	.29	1.2		
Cobalt	10	.15	.7		
Copper	10	.43	2.9		
Iron	100	2.8	14		
Lead	10	.9	2.6		
Magnesium	100	18	39	-3.2	<100
Manganese	10	.05	.6		
Molybdenum	10	.15	.7		
Nickel	10	.3	1.2		
Potassium	500	25	33	58.5	<500
Selenium	10	1.7	4.2		
Silver	10	.32	1		
Sodium	500	6.5	72	-39	<500
Strontium	10	.09	.6		
Thallium	5.0	1.3	2.5		
Tin	10	.76	.7		
Titanium	10	.46	1		
Vanadium	10	.33	1.6		
Zinc	20	.63	4		
Lithium	10	1.1	5.6		

Associated samples MP9078: TD8565-1, TD8565-15, TD8565-16, TD8565-17

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565

Account: ALGC - SGS Accutest Gulf Coast

Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9078

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

09/08/17

Metal	LA36878-1 Original MS		SpikeLot ICPSPKEL% Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron	127	1030	1000	90.3	70-130
Cadmium					
Calcium	340000	361000	1000	-100.0(a	70-130
Chromium					
Cobalt					
Copper	anr				
Iron	anr				
Lead					
Magnesium	10700	12100	1000	100.0	70-130
Manganese					
Molybdenum					
Nickel	anr				
Potassium	27300	37800	10000	105.0	70-130
Selenium					
Silver					
Sodium	4220000	4430000	10000	2100.0(a	70-130
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				
Lithium					

Associated samples MP9078: TD8565-1, TD8565-15, TD8565-16, TD8565-17

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565

Account: ALGC - SGS Accutest Gulf Coast

Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9078

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

09/08/17

Metal	LA36878-1 Original MSD	Spikelot ICPSPK1% Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	127	1020	1000	89.3
Cadmium				
Calcium	340000	365000	1000	300.0(a)
Chromium				
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium	10700	12300	1000	120.0
Manganese				
Molybdenum				
Nickel	anr			
Potassium	27300	39000	10000	117.0
Selenium				
Silver				
Sodium	4220000	4210000	10000	-100.0(a)
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			
Lithium				

Associated samples MP9078: TD8565-1, TD8565-15, TD8565-16, TD8565-17

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD8565

Account: ALGC - SGS Accutest Gulf Coast

Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9078

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 09/08/17

Metal	BSP Result	Spikelot ICPSPIKE1% Rec	QC Limits
Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Boron	927	1000	92.7 85-115
Cadmium			
Calcium	1080	1000	108.0 85-115
Chromium			
Cobalt			
Copper	anr		
Iron	anr		
Lead			
Magnesium	1070	1000	107.0 85-115
Manganese			
Molybdenum			
Nickel	anr		
Potassium	10800	10000	108.0 85-115
Selenium			
Silver			
Sodium	10700	10000	107.0 85-115
Strontium			
Thallium			
Tin			
Titanium			
Vanadium			
Zinc	anr		
Lithium			

Associated samples MP9078: TD8565-1, TD8565-15, TD8565-16, TD8565-17

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9078
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 09/08/17

Metal	LA36878-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	166	129	1.4	0-10
Cadmium				
Calcium	340000	311000	14.2*(a)	0-10
Chromium				
Cobalt				
Copper	anr			
Iron	anr			
Lead				
Magnesium	10700	9410	15.4*(a)	0-10
Manganese				
Molybdenum				
Nickel	anr			
Potassium	27300	22000	19.6*(a)	0-10
Selenium				
Silver				
Sodium	4220000	4400000	4.3	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			
Lithium				

Associated samples MP9078: TD8565-1, TD8565-15, TD8565-16, TD8565-17

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested
 (a) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD8565
Account: ALGC - SGS Accutest Gulf Coast
Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9082
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 09/08/17

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	2.6	13		
Antimony	5.0	.0059	.81		
Arsenic	4.0	.011	.29	-0.091	<4.0
Barium	5.0	.035	.32	-0.020	<5.0
Beryllium	2.0	.0037	.13		
Boron	20	4	4.9		
Cadmium	2.0	.0042	.33	-0.022	<2.0
Calcium	200	1.8	36		
Chromium	4.0	.013	.2		
Cobalt	2.0	.0022	.13		
Copper	2.0	.012	.49	-0.36	<2.0
Iron	100	.71	19	-52	<100
Lithium	2.0	.081	.95		
Lead	1.0	.0035	.31	-0.072	<1.0
Magnesium	100	.42	17		
Manganese	2.0	.01	.17		
Molybdenum	2.0	.092	.44		
Nickel	2.0	.28	.19		
Potassium	100	1.1	15		
Selenium	5.0	.13	1.9	-0.051	<5.0
Silver	1.0	.002	.46		
Sodium	100	2.3	32		
Strontium	2.0	.0054	.2		
Thallium	2.0	.015	.39		
Tin	4.0	.011	.63		
Titanium	2.0	.022	.8		
Uranium	1.0	.0045	.58		
Vanadium	10	.0077	.28		
Zinc	6.0	.067	5.1	-0.41	<6.0

Associated samples MP9082: TD8565-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9082
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 09/08/17

Metal	TD8590-1 Original MS	Spikelot MPICPMS5 % Rec	QC Limits
Aluminum	anr		
Antimony	anr		
Arsenic	4.4 104	100	99.6 70-130
Barium	53.3 158	100	104.7 70-130
Beryllium	anr		
Boron			
Cadmium	0.068 97.2	100	97.1 70-130
Calcium			
Chromium	anr		
Cobalt			
Copper	2.1 96.1	100	94.0 70-130
Iron	176 5220	5000	100.9 70-130
Lithium			
Lead	1.3 101	100	99.7 70-130
Magnesium			
Manganese			
Molybdenum			
Nickel	anr		
Potassium			
Selenium	0.42 510	500	101.9 70-130
Silver	anr		
Sodium			
Strontium			
Thallium	anr		
Tin			
Titanium			
Uranium			
Vanadium			
Zinc	15.2 106	100	90.8 70-130

Associated samples MP9082: TD8565-15

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9082
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 09/08/17

Metal	TD8590-1 Original	MSD	Spikelot MPICPMS5	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony	anr					
Arsenic	4.4	102	100	97.6	1.9	20
Barium	53.3	156	100	102.7	1.3	20
Beryllium	anr					
Boron						
Cadmium	0.068	94.5	100	94.4	2.8	20
Calcium						
Chromium	anr					
Cobalt						
Copper	2.1	94.6	100	92.5	1.6	20
Iron	176	5130	5000	99.1	1.7	20
Lithium						
Lead	1.3	99.1	100	97.8	1.9	20
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Potassium						
Selenium	0.42	500	500	99.9	2.0	20
Silver	anr					
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	15.2	105	100	89.8	0.9	20

Associated samples MP9082: TD8565-15

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD8565

Account: ALGC - SGS Accutest Gulf Coast

Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9082

Methods: EPA 200.8

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 09/08/17

Metal	BSP Result	Spikelot MPICPMS5	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	103	100	103.0	85-115
Barium	103	100	103.0	85-115
Beryllium	anr			
Boron				
Cadmium	99.4	100	99.4	85-115
Calcium				
Chromium	anr			
Cobalt				
Copper	100	100	100.0	85-115
Iron	5170	5000	103.4	85-115
Lithium				
Lead	104	100	104.0	85-115
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	521	500	104.2	85-115
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	98.8	100	98.8	85-115

Associated samples MP9082: TD8565-15

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

8.2.3

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9082
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 09/08/17

Metal	TD8590-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	4.37	3.81	12.9*(a)	0-10
Barium	53.3	53.9	1.2	0-10
Beryllium	anr			
Boron				
Cadmium	0.0679	0.00	100.0(b)	0-10
Calcium				
Chromium	anr			
Cobalt				
Copper	2.11	1.24	41.0*(a)	0-10
Iron	176	0.00	100.0*(a)	0-10
Lithium				
Lead	1.34	0.888	33.9*(a)	0-10
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Potassium				
Selenium	0.424	0.00	100.0(b)	0-10
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	15.2	11.9	21.8*(a)	0-10

Associated samples MP9082: TD8565-15

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TD8565
Account: ALGC - SGS Accutest Gulf Coast
Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9086
Matrix Type: AQUEOUS

Methods: EPA 245.1
Units: ug/l

Prep Date: 09/08/17

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.20	.032	.066	-0.037	<0.20

Associated samples MP9086: TD8565-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

8.3.1

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9086
 Matrix Type: AQUEOUS

Methods: EPA 245.1
 Units: ug/l

Prep Date: 09/08/17

Metal	LA36872-1 Original MS	Spikelot HGSPIKE1 % Rec	QC Limits
-------	--------------------------	----------------------------	--------------

Mercury	0.0	5.0	5	100.0	70-130
---------	-----	-----	---	-------	--------

Associated samples MP9086: TD8565-15

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

8.3.2

8

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9086
 Matrix Type: AQUEOUS

Methods: EPA 245.1
 Units: ug/l

Prep Date: 09/08/17

Metal	LA36872-1 Original MSD	Spikelot HGSPIKE1	% Rec	MSD RPD	QC Limit
Mercury	0.0	4.9	5	98.0	2.0 20

Associated samples MP9086: TD8565-15

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

8.3.2

8

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TD8565

Account: ALGC - SGS Accutest Gulf Coast

Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9086

Methods: EPA 245.1

Matrix Type: AQUEOUS

Units: ug/l

Prep Date: 09/08/17

Metal	BSP Result	Spikelot HGSPIKE1	% Rec	QC Limits
-------	---------------	----------------------	-------	--------------

Mercury	4.9	5	98.0	85-115
---------	-----	---	------	--------

Associated samples MP9086: TD8565-15

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

8.3.3

8

SERIAL DILUTION RESULTS SUMMARY

Login Number: TD8565
 Account: ALGC - SGS Accutest Gulf Coast
 Project: CRAAZP: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

QC Batch ID: MP9086
 Matrix Type: AQUEOUS

Methods: EPA 245.1
 Units: ug/l

Prep Date: 09/08/17

Metal	LA36872-1		QC	
	Original	SDL 1:5	%DIF	Limits

Mercury	0.00	0.00	NC	0-
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Associated samples MP9086: TD8565-15

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

8.3.4

8

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932-130

SGS Accutest Job Number: TD8747

Sampling Dates: 09/06/17 - 09/08/17


Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
Phoenix, AZ 85016
manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: 22



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD8747

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932-130

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD8747-1	09/06/17	11:10	09/09/17	AQ	Ground Water	GW-090617-PG-01
TD8747-2	09/06/17	13:30	09/09/17	AQ	Ground Water	GW-090617-PG-02
TD8747-3	09/07/17	12:55	09/09/17	AQ	Ground Water	GW-090717-PG-03
TD8747-4	09/08/17	07:55	09/09/17	AQ	Ground Water	GW-090817-PG-04
TD8747-5	09/08/17	08:00	09/09/17	AQ	Ground Water	GW-090817-PG-05
TD8747-6	09/08/17	13:00	09/09/17	AQ	Ground Water	GW-090817-PG-06
TD8747-7	09/08/17	13:20	09/09/17	AQ	Ground Water	GW-090817-PG-07
TD8747-8	09/06/17	00:00	09/09/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Page 1 of 1

Job Number: TD8747
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/06/17 thru 09/08/17

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD8747-1 GW-090617-PG-01

No hits reported in this sample.

TD8747-2 GW-090617-PG-02

Tetrachloroethylene	2.7	1.0	ug/l	SW846 8260C
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TD8747-3 GW-090717-PG-03

Trichloroethylene	0.82	0.50	ug/l	SW846 8260C
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TD8747-4 GW-090817-PG-04

Trichloroethylene	1.9	0.50	ug/l	SW846 8260C
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TD8747-5 GW-090817-PG-05

Trichloroethylene	1.9	0.50	ug/l	SW846 8260C
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TD8747-6 GW-090817-PG-06

Xylene (total)	1.8	1.0	ug/l	SW846 8260C
m,p-Xylene	1.4	1.0	ug/l	SW846 8260C

TD8747-7 GW-090817-PG-07

Tetrachloroethylene	1.6	1.0	ug/l	SW846 8260C
Trichloroethylene	3.4	0.50	ug/l	SW846 8260C

TD8747-8 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-090617-PG-01	Date Sampled:	09/06/17
Lab Sample ID:	TD8747-1	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276348.D	1	09/14/17 23:32	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GW-090617-PG-02**Lab Sample ID:** TD8747-2**Date Sampled:** 09/06/17**Matrix:** AQ - Ground Water**Date Received:** 09/09/17**Method:** SW846 8260C**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276349.D	1	09/14/17 23:56	ZQ	n/a	n/a	VG2456
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.7	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	103%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-090717-PG-03	Date Sampled:	09/07/17
Lab Sample ID:	TD8747-3	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276350.D	1	09/15/17 00:21	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	0.82	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-090817-PG-04	Date Sampled:	09/08/17
Lab Sample ID:	TD8747-4	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276351.D	1	09/15/17 00:46	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-090817-PG-05	Date Sampled:	09/08/17
Lab Sample ID:	TD8747-5	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276352.D	1	09/15/17 01:10	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-090817-PG-06	Date Sampled:	09/08/17
Lab Sample ID:	TD8747-6	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276353.D	1	09/15/17 01:34	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	1.8	1.0	ug/l	
	m,p-Xylene	1.4	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-090817-PG-07	Date Sampled:	09/08/17
Lab Sample ID:	TD8747-7	Date Received:	09/09/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276354.D	1	09/15/17 01:58	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.6	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	3.4	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/06/17
Lab Sample ID:	TD8747-8	Date Received:	09/09/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0276347.D	1	09/14/17 23:08	ZQ	n/a	n/a	VG2456
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	96%		72-126%

(a) CCV recovery was above method acceptance criteria. This target analyte was not detected in the sample. AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD8747
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

4.1
4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking #

FED-EX Tracking #
7702 1966 1730

Bottle Order Control #	
------------------------	--

SGS Accutest Job #

4.D8747

Client / Reporting Information				Project Information												Requested Analyses												Matrix Codes																																			
Company Name GHD				Project Name: 042																								DW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL- Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank																																			
Street Address				Street				Billing Information (if different from Report to)																																																							
City		State		Zip		City		State		Company Name																																																					
Project Contact M. PLASCHKE				E-mail				Project # 013932-130				Street Address																																																			
Phone #				Fax #				Client Purchase Order #				City				State				Zip																																											
Sampler(s) Name(s) PATRICK GREENE				Phone #				Project Manager				Attention:																																																			
Collection																Number of preserved Bottles																8260																															
SGS Account Sample #		Field ID / Point of Collection				Date	Time	Sampled By	Matrix	# of bottles	HCl	NiOH	ZnAcOH	HNO3	H2SO4	H2SO4	NONE	Dil Water	MEDH	TSP	NH4OH	ENCORE	OTHER																																								
1		GW-090617-PG-01				9/6	1110	PG	GW	3														X																																							
2		02				9/6	1330			3														X																																							
3		GW-090717-PG-03				9/7	1255			3														X																																							
4		GW-090817-PG-04				9/8	0755			3														X																																							
5		05					0800			3														X																																							
6		06					1300			3														X																																							
7		07					1320			3														X																																							
8		TRIP BLANK								1														X																																							
Turnaround Time (Business days)																Data Deliverable Information																Comments / Special Instructions																															
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY Emergency & Rush T/A data available VIA Lablink																Approved By (SGS Accutest PM): Date: _____ _____ _____ _____ _____ _____																<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other _____ Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC + Surrogate Summary																															
Relinquished By Sampler:																Date Time:																Relinquished By:																Date Time:															
1																9/8/17 1403																Donnelly Gorman																9-8-17 1403															
Relinquished By Sampler:																Date Time:																Relinquished By:																Date Time:															
3																9/8/17 1403																Donnelly Gorman																9-8-17 1403															
Relinquished By:																Date Time:																Relinquished By:																Date Time:															
5																9/8/17 1403																Donnelly Gorman																9-8-17 1403															

TD8747: Chain of Custody

Page 1 of 4

Page 2 of 4

SGS

SGS Accutest Sample Receipt Summary

Page 1 of 2

Job Number: TD8747 Client: GHD Project: OU2
 Date / Time Received: 9/9/2017 10:15:00 AM Delivery Method: Airbill #'s: 770219661730
 No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (2.5/2.5);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation		<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD8747: Chain of Custody
 Page 3 of 4

Sample Receipt Log

Page 2 of 2

Job #: TD8747

Date / Time Received: 9/9/2017 10:15:00 AM 10:15:

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD8747-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
1	TD8747-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.5	0	2.5
	TD8747-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD8747-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TD8747: Chain of Custody

Page 4 of 4

MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD8747

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2456-MB	G0276345.D	1	09/14/17	ZQ	n/a	n/a	VG2456

The QC reported here applies to the following samples:

Method: SW846 8260C

TD8747-1, TD8747-2, TD8747-3, TD8747-4, TD8747-5, TD8747-6, TD8747-7, TD8747-8

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	102% 72-122%
17060-07-0	1,2-Dichloroethane-D4	101% 68-124%
2037-26-5	Toluene-D8	102% 80-119%
460-00-4	4-Bromofluorobenzene	97% 72-126%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD8747

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2456-BS	G0276341.D	1	09/14/17	ZQ	n/a	n/a	VG2456
VG2456-BSD ^a	G0276342.D	1	09/14/17	ZQ	n/a	n/a	VG2456

The QC reported here applies to the following samples:

Method: SW846 8260C

TD8747-1, TD8747-2, TD8747-3, TD8747-4, TD8747-5, TD8747-6, TD8747-7, TD8747-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	23.1	92	23.2	93	0	68-119/30
75-27-4	Bromodichloromethane	25	22.9	92	23.3	93	2	72-118/30
67-66-3	Chloroform	25	22.9	92	22.9	92	0	73-122/30
75-34-3	1,1-Dichloroethane	25	24.6	98	24.5	98	0	72-121/30
75-35-4	1,1-Dichloroethylene	25	24.5	98	24.4	98	0	67-140/30
107-06-2	1,2-Dichloroethane	25	23.0	92	23.4	94	2	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	23.7	95	23.8	95	0	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	24.1	96	24.0	96	0	68-124/30
74-83-9	Methyl bromide	25	20.3	81	20.8	83	2	53-138/30
74-87-3	Methyl chloride	25	18.5	74	18.8	75	2	50-145/30
71-55-6	1,1,1-Trichloroethane	25	24.3	97	24.0	96	1	72-129/30
127-18-4	Tetrachloroethylene	25	25.1	100	25.4	102	1	72-132/30
108-88-3	Toluene	25	23.0	92	23.3	93	1	73-119/30
79-01-6	Trichloroethylene	25	24.3	97	24.4	98	0	73-121/30
75-69-4	Trichlorofluoromethane	25	24.2	97	23.7	95	2	46-152/30
75-01-4	Vinyl chloride	25	21.6	86	21.7	87	0	54-126/30
1330-20-7	Xylene (total)	75	69.5	93	71.1	95	2	74-119/30
	m,p-Xylene	50	47.0	94	48.1	96	2	74-119/30
95-47-6	o-Xylene	25	22.4	90	23.0	92	3	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	98%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	98%	68-124%
2037-26-5	Toluene-D8	101%	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	99%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932-130

SGS Accutest Job Number: TD9053

Sampling Dates: 09/11/17 - 09/13/17




Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
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manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: **33**



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD9053

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932-130

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD9053-1	09/11/17	09:25	09/14/17	AQ	Ground Water	GW-091117-PG-08
TD9053-2	09/11/17	10:45	09/14/17	AQ	Ground Water	GW-091117-PG-09
TD9053-3	09/11/17	11:50	09/14/17	AQ	Ground Water	GW-091117-PG-10
TD9053-4	09/11/17	13:30	09/14/17	AQ	Ground Water	GW-091117-PG-11
TD9053-5	09/12/17	08:10	09/14/17	AQ	Ground Water	GW-091217-PG-12
TD9053-6	09/12/17	11:45	09/14/17	AQ	Ground Water	GW-091217-PG-13
TD9053-7	09/12/17	14:40	09/14/17	AQ	Ground Water	GW-091217-PG-14
TD9053-8	09/12/17	14:45	09/14/17	AQ	Ground Water	GW-091217-PG-15
TD9053-9	09/13/17	07:10	09/14/17	AQ	Ground Water	GW-091317-PG-16
TD9053-10	09/13/17	10:45	09/14/17	AQ	Ground Water	GW-091317-PG-17
TD9053-11	09/13/17	12:00	09/14/17	AQ	Ground Water	GW-091317-PG-18
TD9053-12	09/13/17	13:30	09/14/17	AQ	Ground Water	GW-091317-PG-19
TD9053-13	09/13/17	00:00	09/14/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Page 1 of 2

Job Number: TD9053
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/11/17 thru 09/13/17

Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
---------------	------------------	--------------------	----	-----	-------	--------

TD9053-1 GW-091117-PG-08

Trichloroethylene	3.5	0.50		ug/l	SW846 8260C
-------------------	-----	------	--	------	-------------

TD9053-2 GW-091117-PG-09

No hits reported in this sample.

TD9053-3 GW-091117-PG-10

Trichloroethylene	1.5	0.50		ug/l	SW846 8260C
-------------------	-----	------	--	------	-------------

TD9053-4 GW-091117-PG-11

Trichloroethylene	2.1	0.50		ug/l	SW846 8260C
-------------------	-----	------	--	------	-------------

TD9053-5 GW-091217-PG-12

cis-1,2-Dichloroethylene	2.1	1.0		ug/l	SW846 8260C
Trichloroethylene	2.4	0.50		ug/l	SW846 8260C

TD9053-6 GW-091217-PG-13

1,1-Dichloroethylene	1.0	1.0		ug/l	SW846 8260C
Trichloroethylene	4.8	0.50		ug/l	SW846 8260C

TD9053-7 GW-091217-PG-14

1,1-Dichloroethane	1.8	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	4.9	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	1.4	1.0		ug/l	SW846 8260C
Trichloroethylene	5.9	0.50		ug/l	SW846 8260C

TD9053-8 GW-091217-PG-15

1,1-Dichloroethane	1.7	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	4.7	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	1.4	1.0		ug/l	SW846 8260C
Trichloroethylene	5.9	0.50		ug/l	SW846 8260C

TD9053-9 GW-091317-PG-16

1,1-Dichloroethylene	2.3	1.0		ug/l	SW846 8260C
Trichloroethylene	2.6	0.50		ug/l	SW846 8260C

Summary of Hits

Page 2 of 2

Job Number: TD9053
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/11/17 thru 09/13/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD9053-10 GW-091317-PG-17

1,1-Dichloroethylene	2.5	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	1.4	1.0	ug/l	SW846 8260C
Trichloroethylene	7.6	0.50	ug/l	SW846 8260C

TD9053-11 GW-091317-PG-18

No hits reported in this sample.

TD9053-12 GW-091317-PG-19

Chloroform	2.0	1.0	ug/l	SW846 8260C
Trichloroethylene	5.1	0.50	ug/l	SW846 8260C

TD9053-13 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-091117-PG-08	Date Sampled:	09/11/17
Lab Sample ID:	TD9053-1	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58550.D	1	09/21/17 11:40	EM	n/a	n/a	VZ5406
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	3.5	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	104%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091117-PG-09	Date Sampled:	09/11/17
Lab Sample ID:	TD9053-2	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240078.D	1	09/15/17 17:24	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	103%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091117-PG-10	Date Sampled:	09/11/17
Lab Sample ID:	TD9053-3	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240079.D	1	09/15/17 17:50	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	1.5	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GW-091117-PG-11**Lab Sample ID:** TD9053-4**Date Sampled:** 09/11/17**Matrix:** AQ - Ground Water**Date Received:** 09/14/17**Method:** SW846 8260C**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58551.D	1	09/21/17 12:06	EM	n/a	n/a	VZ5406
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.1	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091217-PG-12	Date Sampled:	09/12/17
Lab Sample ID:	TD9053-5	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240081.D	1	09/15/17 18:43	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	2.1	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.4	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091217-PG-13	Date Sampled:	09/12/17
Lab Sample ID:	TD9053-6	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58552.D	1	09/21/17 12:35	EM	n/a	n/a	VZ5406
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.0	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	4.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: GW-091217-PG-14**Lab Sample ID:** TD9053-7**Date Sampled:** 09/12/17**Matrix:** AQ - Ground Water**Date Received:** 09/14/17**Method:** SW846 8260C**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58553.D	1	09/21/17 13:01	EM	n/a	n/a	VZ5406
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.8	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	4.9	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	5.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091217-PG-15	Date Sampled:	09/12/17
Lab Sample ID:	TD9053-8	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58554.D	1	09/21/17 13:27	EM	n/a	n/a	VZ5406
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.7	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	4.7	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	5.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091317-PG-16	Date Sampled:	09/13/17
Lab Sample ID:	TD9053-9	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58555.D	1	09/21/17 13:53	EM	n/a	n/a	VZ5406
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.6	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091317-PG-17	Date Sampled:	09/13/17
Lab Sample ID:	TD9053-10	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58556.D	1	09/21/17 14:19	EM	n/a	n/a	VZ5406
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.5	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	7.6	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091317-PG-18	Date Sampled:	09/13/17
Lab Sample ID:	TD9053-11	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240087.D	1	09/15/17 21:22	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	104%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091317-PG-19	Date Sampled:	09/13/17
Lab Sample ID:	TD9053-12	Date Received:	09/14/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240088.D	1	09/15/17 21:48	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	5.1	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/13/17
Lab Sample ID:	TD9053-13	Date Received:	09/14/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240089.D	1	09/15/17 22:15	EM	n/a	n/a	VX3347
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD9053
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
N1	See case narrative.
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

4.1
4



PHOENIX
ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

pg. 1 of 2

FED-EX Tracking # **7702 8312 0959**

SGS Accutest Quote #

Bottle Order Control #

SGS Accutest NC Job #: **C**

TD9053

Client / Reporting Information		Project Information		Requested Analysis		Matrix Codes	
Company Name GHD	Project Name: 042					WW- Wastewater GW- Ground Water SW- Surface Water SO- Soil OI- Oil WP- Wipe LIO- Non-aqueous Liquid AIR DW- Drinking Water (Perchlorate Only)	
Address	Street						
City	State	City	State				
Project Contact: MANFRED PLASCHE	Project # 013932-130						
Phone #	EMAIL: Manfred.plaschke@ghd.com						
Samplers Name PATRICK GREENE		Client Purchase Order #					
SGS Accutest Sample ID	Sample ID / Field Point / Point of Collection	Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles
1	GW-091117-PG-08	9/11/17	0925	PG	GW	3	
2			1045			3	
3			1150			3	
4			1330			3	
5	GW-091217-PG-12	9/12	0810			3	
6			1145			3	
7			1440			3	
8			1445			3	
9	GW-091317-PG-16	9/13	0710			3	
10			1045			3	
Turnaround Time (Business days)		Data Deliverable Information		Comments / Remarks			
<input checked="" type="checkbox"/> 10 Day <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day <input type="checkbox"/> Same Day		Approved By/ Date:		TAGGED BY: ST			
Emergency T/A data available VIA Lablink		Provide EDF Global ID		VERIFIED BY:			
		Provide EDF Logcode:					
Sample Custody must be documented below each time samples change possession, including courier delivery.							
Relinquished By:	Date Time:	Received By:	Date Time:	Relinquished By:	Date Time:	Received By:	Date Time:
1 Patrick Greene	9/11/17 1500	1 Patrick Greene	9/13/17 1620	2 Patrick Greene	9/13/17 1620	2 Fed Ex	
3 Patrick Greene	9/14/17	3 Patrick Greene		4 Patrick Greene		4 Patrick Greene	
Relinquished By:	Date Time:	Received By:	Date Time:	Custody Seal #	Appropriate Bottle / Pres. Y / N	Headspace Y / N	On Ice Y / N
5		5			Labels match Coc? Y / N	Separate Receiving Check List used: Y / N	Cooler Temp. 4.8 °C

TD9053: Chain of Custody

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[illegible]

TD9053: Chain of Custody

Page 2 of 6

ACCUTEST COOLER TEMP FORM TC# TD9053

Delivered by (circle one): FedEx/UPS ALGC Driver Client
Date: 9-17-17
Client:
Cooler Number: 1
Thermometer ID: IBH CF, °C 0 Corrected Temp, °C 4.8

SAMPLES CONTAINED IN COOLER

ACCUTEST

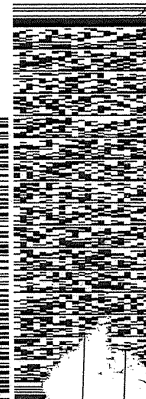
Initial IBH Date 9-13-17

SHIP DATE: 13SEP17
ACT WTGT: 38.00 LB
CAD: 10465527/NET3920
DMS: 24X20X18 IN
BILL RECIPIENT

LD/MSCA (480) 275-8831
SYLCOIM
TEST TEMPE SERVICE CENTER
141 W. UNIVERSITY DR
SUITE 150
HOUSTON TX 77071
UNITED STATES US

TO SAMPLE RECEIVING
ACCUTEST LABORATORIES
10165 HARWIN DR.
SUITE 150
HOUSTON TX 77071

REF CLEARCREEK
(713) 271-4700
PO DEPT.



10:30 1 A
218

THU - 14 SEP 10:30A
PRIORITY OVERNIGHT
DSR
77071
IAH
TX-US

7702 5312 0959

SGRA



① 17-1045-100
1050 12661
② 544a M

TD9053: Chain of Custody
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SGS Accutest Sample Receipt Summary

Page 1 of 3

Job Number: TD9053 Client: GHD Project: OU2
 Date / Time Received: 9/14/2017 10:10:00 AM Delivery Method: Airbill #s: 770253120959
 No. Coolers: 1 Therm ID: IR-4; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (4.8/4.8);

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|-------------------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|--|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | <input type="text"/> | |
| 3. Cooler media: | <input type="text" value="Ice (Bag)"/> | |

Quality Control Preservation

Y or N

N/A

WTB STB

- | | | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | | | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|-------------------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | <input type="text" value="Intact"/> | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments Added 1 set of water trip blank , not on coc.
 Coc time is 10:45 but 10:50 on samle label for PG-17.

TD9053: Chain of Custody

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Sample Receipt Log

Page 2 of 3

Job #: TD9053

Date / Time Received: 9/14/2017 10:10:00 AM 10:1

Initials: EC

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9053-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8

TD9053: Chain of Custody

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Sample Receipt Log

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Job #: TD9053

Date / Time Received: 9/14/2017 10:10:00 AM 10:1

Initials: EC

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9053-8	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-9	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-9	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-9	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-11	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-12	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-12	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-12	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-13	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-13	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-14	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8
1	TD9053-14	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-4	4.8	0	4.8

TD9053: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

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Job Number: TD9053

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3347-MB	X01240073.D	1	09/15/17	EM	n/a	n/a	VX3347

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9053-2, TD9053-3, TD9053-5, TD9053-11, TD9053-12, TD9053-13

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	98% 72-122%
17060-07-0	1,2-Dichloroethane-D4	110% 68-124%
2037-26-5	Toluene-D8	103% 80-119%
460-00-4	4-Bromofluorobenzene	100% 72-126%

Method Blank Summary

Page 1 of 1

Job Number: TD9053

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5406-MB	Z58548.D	1	09/21/17	EM	n/a	n/a	VZ5406

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9053-1, TD9053-4, TD9053-6, TD9053-7, TD9053-8, TD9053-9, TD9053-10

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	92% 72-122%
17060-07-0	1,2-Dichloroethane-D4	102% 68-124%
2037-26-5	Toluene-D8	99% 80-119%
460-00-4	4-Bromofluorobenzene	100% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD9053**Account:** CRAAZP GHD Services Inc.**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5406-BS	Z58546.D	1	09/21/17	EM	n/a	n/a	VZ5406

The QC reported here applies to the following samples:**Method:** SW846 8260C

TD9053-1, TD9053-4, TD9053-6, TD9053-7, TD9053-8, TD9053-9, TD9053-10

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	25.3	101	68-119
75-27-4	Bromodichloromethane	25	22.5	90	72-118
67-66-3	Chloroform	25	24.3	97	73-122
75-34-3	1,1-Dichloroethane	25	23.3	93	72-121
75-35-4	1,1-Dichloroethylene	25	24.3	97	67-140
107-06-2	1,2-Dichloroethane	25	24.4	98	68-121
156-59-2	cis-1,2-Dichloroethylene	25	22.4	90	72-117
156-60-5	trans-1,2-Dichloroethylene	25	23.3	93	68-124
74-83-9	Methyl bromide	25	22.1	88	53-138
74-87-3	Methyl chloride	25	22.5	90	50-145
71-55-6	1,1,1-Trichloroethane	25	23.0	92	72-129
127-18-4	Tetrachloroethylene	25	26.9	108	72-132
108-88-3	Toluene	25	26.6	106	73-119
79-01-6	Trichloroethylene	25	25.9	104	73-121
75-69-4	Trichlorofluoromethane	25	22.9	92	46-152
75-01-4	Vinyl chloride	25	27.9	112	54-126
1330-20-7	Xylene (total)	75	80.0	107	74-119
	m,p-Xylene	50	54.4	109	74-119
95-47-6	o-Xylene	25	25.6	102	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	98%	68-124%
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	102%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD9053

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3347-BS	X01240070.D	1	09/15/17	EM	n/a	n/a	VX3347
VX3347-BSD ^a	X01240071.D	1	09/15/17	EM	n/a	n/a	VX3347

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9053-2, TD9053-3, TD9053-5, TD9053-11, TD9053-12, TD9053-13

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	22.2	89	22.9	92	3	68-119/30
75-27-4	Bromodichloromethane	25	21.6	86	22.1	88	2	72-118/30
67-66-3	Chloroform	25	20.8	83	20.9	84	0	73-122/30
75-34-3	1,1-Dichloroethane	25	22.4	90	23.0	92	3	72-121/30
75-35-4	1,1-Dichloroethylene	25	29.8	119	30.4	122	2	67-140/30
107-06-2	1,2-Dichloroethane	25	24.2	97	24.6	98	2	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	22.3	89	22.8	91	2	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	23.3	93	23.8	95	2	68-124/30
74-83-9	Methyl bromide	25	15.1	60	17.6	70	15	53-138/30
74-87-3	Methyl chloride	25	21.4	86	22.2	89	4	50-145/30
71-55-6	1,1,1-Trichloroethane	25	22.7	91	23.3	93	3	72-129/30
127-18-4	Tetrachloroethylene	25	21.3	85	22.6	90	6	72-132/30
108-88-3	Toluene	25	22.1	88	22.7	91	3	73-119/30
79-01-6	Trichloroethylene	25	20.7	83	21.5	86	4	73-121/30
75-69-4	Trichlorofluoromethane	25	27.6	110	28.8	115	4	46-152/30
75-01-4	Vinyl chloride	25	23.1	92	23.8	95	3	54-126/30
1330-20-7	Xylene (total)	75	66.2	88	67.7	90	2	74-119/30
	m,p-Xylene	50	45.2	90	46.1	92	2	74-119/30
95-47-6	o-Xylene	25	21.1	84	21.6	86	2	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	104%	102%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	107%	68-124%
2037-26-5	Toluene-D8	102%	102%	80-119%
460-00-4	4-Bromofluorobenzene	101%	101%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9053

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD8740-1MS	Z58560.D	10	09/21/17	EM	n/a	n/a	VZ5406
TD8740-1MSD	Z58561.D	10	09/21/17	EM	n/a	n/a	VZ5406
TD8740-1 ^a	Z58559.D	10	09/21/17	EM	n/a	n/a	VZ5406

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9053-1, TD9053-4, TD9053-6, TD9053-7, TD9053-8, TD9053-9, TD9053-10

CAS No.	Compound	TD8740-1 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	250	213	85	250	238	95	11	68-119/12
75-27-4	Bromodichloromethane	ND	250	187	75	250	203	81	8	72-118/16
67-66-3	Chloroform	ND	250	210	84	250	235	94	11	73-122/13
75-34-3	1,1-Dichloroethane	ND	250	199	80	250	230	92	14	72-121/14
75-35-4	1,1-Dichloroethylene	25.6	250	229	81	250	257	93	12	67-140/18
107-06-2	1,2-Dichloroethane	ND	250	209	84	250	229	92	9	68-121/12
156-59-2	cis-1,2-Dichloroethylene	49.9	250	242	77	250	271	88	11	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	250	198	79	250	226	90	13	68-124/15
74-83-9	Methyl bromide	ND	250	179	72	250	197	79	10	53-138/16
74-87-3	Methyl chloride	ND	250	183	73	250	206	82	12	50-145/17
71-55-6	1,1,1-Trichloroethane	15.5	250	211	78	250	233	87	10	72-129/14
127-18-4	Tetrachloroethylene	36.3	250	267	92	250	291	102	9	72-132/14
108-88-3	Toluene	ND	250	224	90	250	248	99	10	73-119/13
79-01-6	Trichloroethylene	840	250	932	37* ^b	250	984	58* ^b	5	73-121/13
75-69-4	Trichlorofluoromethane	ND	250	212	85	250	218	87	3	46-152/25
75-01-4	Vinyl chloride	3.6	250	238	94	250	265	105	11	54-126/17
1330-20-7	Xylene (total)	ND	750	691	92	750	749	100	8	74-119/13
	m,p-Xylene	ND	500	471	94	500	510	102	8	74-119/13
95-47-6	o-Xylene	ND	250	221	88	250	239	96	8	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD8740-1	Limits
1868-53-7	Dibromofluoromethane	91%	93%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	99%	99%	108%	68-124%
2037-26-5	Toluene-D8	98%	98%	99%	80-119%
460-00-4	4-Bromofluorobenzene	100%	99%	101%	72-126%

(a) AZ:D2

(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD9149

Sampling Dates: 09/14/17 - 09/15/17


Report to:

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Total number of pages in report: 27



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD9149

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD9149-1	09/14/17	06:40	09/16/17	AQ	Ground Water	GW-091417-PG-20
TD9149-2	09/14/17	08:15	09/16/17	AQ	Ground Water	GW-091417-PG-21
TD9149-3	09/14/17	08:55	09/16/17	AQ	Ground Water	GW-091417-PG-22
TD9149-4	09/14/17	11:20	09/16/17	AQ	Ground Water	GW-091417-PG-23
TD9149-5	09/14/17	12:40	09/16/17	AQ	Ground Water	GW-091417-PG-24
TD9149-6	09/14/17	12:45	09/16/17	AQ	Ground Water	GW-091417-PG-25
TD9149-7	09/15/17	07:45	09/16/17	AQ	Ground Water	GW-091517-PG-26
TD9149-8	09/14/17	00:00	09/16/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Page 1 of 1

Job Number: TD9149
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/14/17 thru 09/15/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD9149-1 GW-091417-PG-20

No hits reported in this sample.

TD9149-2 GW-091417-PG-21

No hits reported in this sample.

TD9149-3 GW-091417-PG-22

Chloroform	1.1	1.0	ug/l	SW846 8260C
1,1-Dichloroethane	2.1	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	2.7	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	2.0	1.0	ug/l	SW846 8260C
Trichloroethylene	10.3	0.50	ug/l	SW846 8260C

TD9149-4 GW-091417-PG-23

Chloroform	1.3	1.0	ug/l	SW846 8260C
Tetrachloroethylene	1.4	1.0	ug/l	SW846 8260C
Trichloroethylene	7.7	0.50	ug/l	SW846 8260C

TD9149-5 GW-091417-PG-24

Chloroform	1.5	1.0	ug/l	SW846 8260C
Trichloroethylene	13.0	0.50	ug/l	SW846 8260C

TD9149-6 GW-091417-PG-25

Chloroform	1.6	1.0	ug/l	SW846 8260C
Trichloroethylene	13.1	0.50	ug/l	SW846 8260C

TD9149-7 GW-091517-PG-26

1,1-Dichloroethane	2.2	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	5.1	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	2.2	1.0	ug/l	SW846 8260C
Trichloroethylene	8.8	0.50	ug/l	SW846 8260C

TD9149-8 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID: GW-091417-PG-20**Lab Sample ID:** TD9149-1**Date Sampled:** 09/14/17**Matrix:** AQ - Ground Water**Date Received:** 09/16/17**Method:** SW846 8260C**Percent Solids:** n/a**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240161.D	1	09/19/17 01:42	EM	n/a	n/a	VX3350
Run #2							

Purge Volume

Run #1 5.0 ml

Run #2

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	105%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

(a) AZ:V1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091417-PG-21	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-2	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240162.D	1	09/19/17 02:09	EM	n/a	n/a	VX3350
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	105%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091417-PG-22	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-3	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58509.D	1	09/20/17 00:01	EM	n/a	n/a	VZ5404
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.1	1.0	ug/l	
75-34-3	1,1-Dichloroethane	2.1	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.7	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	2.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	10.3	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	106%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091417-PG-23	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-4	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240164.D	1	09/19/17 03:02	EM	n/a	n/a	VX3350
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.3	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.4	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	7.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		72-122%
17060-07-0	1,2-Dichloroethane-D4	116%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	103%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091417-PG-24	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-5	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240165.D	1	09/19/17 03:28	EM	n/a	n/a	VX3350
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.5	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	13.0	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		72-122%
17060-07-0	1,2-Dichloroethane-D4	119%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091417-PG-25	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-6	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240166.D	1	09/19/17 03:55	EM	n/a	n/a	VX3350
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.6	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	13.1	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		72-122%
17060-07-0	1,2-Dichloroethane-D4	118%		68-124%
2037-26-5	Toluene-D8	103%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091517-PG-26	Date Sampled:	09/15/17
Lab Sample ID:	TD9149-7	Date Received:	09/16/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58522.D	1	09/20/17 12:06	EM	n/a	n/a	VZ5405
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	2.2	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	5.1	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	2.2	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	8.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/14/17
Lab Sample ID:	TD9149-8	Date Received:	09/16/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240168.D	1	09/19/17 04:48	EM	n/a	n/a	VX3350
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		72-122%
17060-07-0	1,2-Dichloroethane-D4	117%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	103%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD9149
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

4.1
4



PHOENIX
ACCUTEST

CHAIN OF CUSTODY

2105 Lundy Ave, San Jose, CA 95131
(408) 588-0200 FAX: (408) 588-0201

1 of 1

FED-EX Tracking # 7102 7078 896	Bottle Order Control #
SGS Accutest Quote #	SGS Accutest NC Job #: TD9149

Client / Reporting Information				Project Information												Requested Analysis												Matrix Codes																																																											
Company Name GHD				Project Name:																								WW- Wastewater																																																											
Address				Street																								GW- Ground Water																																																											
City State Zip				City State																								SW- Surface Water																																																											
Project Contact: MANFRED PLASCHE				Project # 013932-130																								SO- Soil																																																											
Phone #				EMAIL:																								OI-Oil																																																											
Samplers Name PATRICK GREENE				Client Purchase Order #																								WP-Wipe																																																											
SGS Accutest Sample ID				Collection																								LIQ - Non-aqueous Liquid																																																											
Sample ID / Field Point / Point of Collection				Date Time Sampled by Matrix # of bottles																								AIR																																																											
				HCl HNO3 H2SO4 HClO4 NH4OH NH4SCN MeOH ENCOHE																								DIW- Drinking Water (Perchlorate Only)																																																											
																												LAB USE ONLY																																																											
1 GW-091417-PG-20 9/14/17 0640 PG GW 3																																																																																							
2 21 0615 3																																																																																							
3 22 0655 3																																																																																							
4 23 1120 3																																																																																							
5 24 1240 3																																																																																							
6 25 1245 3																																																																																							
7 GW-091517-PG-20 9/15/17 0745 3																																																																																							
8 TRIP BLANK 2																																																																																							
Turnaround Time (Business days)				Data Deliverable Information												Comments / Remarks																																																																							
<input checked="" type="checkbox"/> 10 Day <input type="checkbox"/> 5 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day <input type="checkbox"/> Same Day				Approved By/ Date: _____ _____ _____ _____ _____												<input type="checkbox"/> Commercial "A" - Results only <input type="checkbox"/> Commercial "B" - Results with QC summaries <input type="checkbox"/> Commercial "B+" - Results, QC, and chromatograms <input type="checkbox"/> FULT1 - Level 4 data package <input type="checkbox"/> EDF for Geotracker <input type="checkbox"/> EDD Format _____ Provide EDF Global ID _____ Provide EDF Logcode: _____																																																																							
Emergency T/A data available VIA Lablink				Sample Custody must be documented below each time samples change possession, including courier delivery.																																																																																			
Relinquished by: John C. [Signature]				Date Time: 9/15/17 1123												Received By: Amy [Signature]												Date Time: 9/15-17 1600												Received By: 2 Fed Ex																																															
Relinquished by: Fedex				Date Time: 9/14/17 1140												Received By: 8/14/17																																																																							
Relinquished by:				Date Time:												Received By:												Custody Seal #												Appropriate Bottle / Pres. Y / N												Headspace Y / N												On Ice Y / N												Cooling Temp. 3.6 °C											
5																5																								Labels match Coc? Y / N												Separate Receiving Check List used: Y / N																																			

TD9149: Chain of Custody

Page 1 of 4

Delivered by (circle one):

FedEx/UPS

Client

ALGC Driver

Date:

9-16-17

Client: _____

6410

Cooler Number:

CE 000000

IN-9

Thermometer ID:

Corrected Temp, °C 3.4

SAMPLES CONTAINED IN COOLER

TD9149: Chain of Custody
Page 2 of 4

SGS Accutest Sample Receipt Summary

Page 1 of 2

Job Number: TD9149 Client: GHD Project:
 Date / Time Received: Delivery Method: Airbill #'s: 770270788196
 No. Coolers: 1 Therm ID: IR9; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (3.6/3.6);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation		<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD9149: Chain of Custody
 Page 3 of 4

Sample Receipt Log

Page 2 of 2

Job #: TD9149

Date / Time Received: 9/16/2017 11:40:00 AM

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9149-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
1	TD9149-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	3.6	0	3.6
	TD9149-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9149-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TD9149: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3350-MB	X01240160.D	1	09/19/17	EM	n/a	n/a	VX3350

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-1, TD9149-2, TD9149-4, TD9149-5, TD9149-6, TD9149-8

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	105% 72-122%
17060-07-0	1,2-Dichloroethane-D4	111% 68-124%
2037-26-5	Toluene-D8	103% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

Method Blank Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5404-MB	Z58490.D	1	09/19/17	EM	n/a	n/a	VZ5404

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-3

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	97% 72-122%
17060-07-0	1,2-Dichloroethane-D4	104% 68-124%
2037-26-5	Toluene-D8	101% 80-119%
460-00-4	4-Bromofluorobenzene	100% 72-126%

Method Blank Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5405-MB	Z58521.D	1	09/20/17	EM	n/a	n/a	VZ5405

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-7

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	92% 72-122%
17060-07-0	1,2-Dichloroethane-D4	101% 68-124%
2037-26-5	Toluene-D8	99% 80-119%
460-00-4	4-Bromofluorobenzene	101% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5405-BS	Z58519.D	1	09/20/17	EM	n/a	n/a	VZ5405

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-7

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	25.9	104	68-119
75-27-4	Bromodichloromethane	25	22.3	89	72-118
67-66-3	Chloroform	25	24.7	99	73-122
75-34-3	1,1-Dichloroethane	25	24.6	98	72-121
75-35-4	1,1-Dichloroethylene	25	25.2	101	67-140
107-06-2	1,2-Dichloroethane	25	23.7	95	68-121
156-59-2	cis-1,2-Dichloroethylene	25	23.4	94	72-117
156-60-5	trans-1,2-Dichloroethylene	25	23.9	96	68-124
74-83-9	Methyl bromide	25	22.4	90	53-138
74-87-3	Methyl chloride	25	24.3	97	50-145
71-55-6	1,1,1-Trichloroethane	25	22.8	91	72-129
127-18-4	Tetrachloroethylene	25	27.5	110	72-132
108-88-3	Toluene	25	27.0	108	73-119
79-01-6	Trichloroethylene	25	25.9	104	73-121
75-69-4	Trichlorofluoromethane	25	22.3	89	46-152
75-01-4	Vinyl chloride	25	25.8	103	54-126
1330-20-7	Xylene (total)	75	80.7	108	74-119
	m,p-Xylene	50	55.1	110	74-119
95-47-6	o-Xylene	25	25.6	102	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	96%	68-124%
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	101%	72-126%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3350-BS	X01240157.D	1	09/18/17	EM	n/a	n/a	VX3350
VX3350-BSD ^a	X01240158.D	1	09/19/17	EM	n/a	n/a	VX3350

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-1, TD9149-2, TD9149-4, TD9149-5, TD9149-6, TD9149-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	24.8	99	25.2	101	2	68-119/30
75-27-4	Bromodichloromethane	25	25.5	102	26.0	104	2	72-118/30
67-66-3	Chloroform	25	25.0	100	25.0	100	0	73-122/30
75-34-3	1,1-Dichloroethane	25	26.3	105	26.7	107	2	72-121/30
75-35-4	1,1-Dichloroethylene	25	30.6	122	30.3	121	1	67-140/30
107-06-2	1,2-Dichloroethane	25	28.7	115	28.9	116	1	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	26.3	105	26.8	107	2	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	26.9	108	26.6	106	1	68-124/30
74-83-9	Methyl bromide	25	24.0	96	25.7	103	7	53-138/30
74-87-3	Methyl chloride	25	25.2	101	27.0	108	7	50-145/30
71-55-6	1,1,1-Trichloroethane	25	27.5	110	27.3	109	1	72-129/30
127-18-4	Tetrachloroethylene	25	23.5	94	23.3	93	1	72-132/30
108-88-3	Toluene	25	25.4	102	25.4	102	0	73-119/30
79-01-6	Trichloroethylene	25	23.7	95	23.7	95	0	73-121/30
75-69-4	Trichlorofluoromethane	25	31.1	124	29.4	118	6	46-152/30
75-01-4	Vinyl chloride	25	26.3	105	27.9	112	6	54-126/30
1330-20-7	Xylene (total)	75	74.9	100	75.3	100	1	74-119/30
	m,p-Xylene	50	51.1	102	51.2	102	0	74-119/30
95-47-6	o-Xylene	25	23.9	96	24.1	96	1	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	109%	109%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	112%	68-124%
2037-26-5	Toluene-D8	104%	103%	80-119%
460-00-4	4-Bromofluorobenzene	104%	103%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5404-BS	Z58487.D	1	09/19/17	EM	n/a	n/a	VZ5404
VZ5404-BSD ^a	Z58488.D	1	09/19/17	EM	n/a	n/a	VZ5404

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	23.9	96	25.1	100	5	68-119/30
75-27-4	Bromodichloromethane	25	20.8	83	21.0	84	1	72-118/30
67-66-3	Chloroform	25	23.5	94	23.4	94	0	73-122/30
75-34-3	1,1-Dichloroethane	25	22.8	91	23.3	93	2	72-121/30
75-35-4	1,1-Dichloroethylene	25	22.3	89	22.6	90	1	67-140/30
107-06-2	1,2-Dichloroethane	25	22.7	91	22.6	90	0	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	21.6	86	22.2	89	3	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	22.0	88	22.7	91	3	68-124/30
74-83-9	Methyl bromide	25	21.8	87	24.1	96	10	53-138/30
74-87-3	Methyl chloride	25	21.7	87	23.9	96	10	50-145/30
71-55-6	1,1,1-Trichloroethane	25	21.7	87	21.7	87	0	72-129/30
127-18-4	Tetrachloroethylene	25	25.0	100	26.1	104	4	72-132/30
108-88-3	Toluene	25	24.7	99	25.7	103	4	73-119/30
79-01-6	Trichloroethylene	25	24.0	96	24.8	99	3	73-121/30
75-69-4	Trichlorofluoromethane	25	23.3	93	23.1	92	1	46-152/30
75-01-4	Vinyl chloride	25	24.4	98	25.1	100	3	54-126/30
1330-20-7	Xylene (total)	75	74.8	100	76.9	103	3	74-119/30
	m,p-Xylene	50	51.2	102	52.4	105	2	74-119/30
95-47-6	o-Xylene	25	23.6	94	24.5	98	4	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	91%	72-122%
17060-07-0	1,2-Dichloroethane-D4	99%	98%	68-124%
2037-26-5	Toluene-D8	97%	98%	80-119%
460-00-4	4-Bromofluorobenzene	101%	101%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9149

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD9093-4MS	Z58524.D	10	09/20/17	EM	n/a	n/a	VZ5405
TD9093-4MSD	Z58525.D	10	09/20/17	EM	n/a	n/a	VZ5405
TD9093-4 ^a	Z58523.D	10	09/20/17	EM	n/a	n/a	VZ5405

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9149-7

CAS No.	Compound	TD9093-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	250	167	67*	250	211	84	23*	68-119/12
75-27-4	Bromodichloromethane	ND	250	150	60*	250	184	74	20*	72-118/16
67-66-3	Chloroform	ND	250	171	68*	250	201	80	16*	73-122/13
75-34-3	1,1-Dichloroethane	ND	250	160	64*	250	194	78	19*	72-121/14
75-35-4	1,1-Dichloroethylene	ND	250	161	64*	250	197	79	20*	67-140/18
107-06-2	1,2-Dichloroethane	ND	250	176	70	250	203	81	14*	68-121/12
156-59-2	cis-1,2-Dichloroethylene	6.4	250	166	64*	250	195	75	16*	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	250	160	64*	250	191	76	18*	68-124/15
74-83-9	Methyl bromide	ND	250	159	64	250	198	79	22*	53-138/16
74-87-3	Methyl chloride	ND	250	173	69	250	196	78	12	50-145/17
71-55-6	1,1,1-Trichloroethane	ND	250	150	60*	250	184	74	20*	72-129/14
127-18-4	Tetrachloroethylene	ND	250	173	69*	250	219	88	23*	72-132/14
108-88-3	Toluene	ND	250	171	68*	250	215	86	23*	73-119/13
79-01-6	Trichloroethylene	1540	250	1490	-20* ^b	250	1620	32* ^b	8	73-121/13
75-69-4	Trichlorofluoromethane	ND	250	171	68	250	190	76	11	46-152/25
75-01-4	Vinyl chloride	ND	250	188	75	250	213	85	12	54-126/17
1330-20-7	Xylene (total)	ND	750	519	69*	750	646	86	22*	74-119/13
	m,p-Xylene	ND	500	351	70*	500	441	88	23*	74-119/13
95-47-6	o-Xylene	ND	250	168	67*	250	205	82	20*	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD9093-4	Limits
1868-53-7	Dibromofluoromethane	97%	92%		72-122%
17060-07-0	1,2-Dichloroethane-D4	102%	98%		68-124%
2037-26-5	Toluene-D8	99%	99%		80-119%
460-00-4	4-Bromofluorobenzene	102%	99%		72-126%

(a) Sample used for QC purposes only.

(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD9408

Sampling Dates: 09/18/17 - 09/20/17


Report to:

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Total number of pages in report: **29**



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD9408

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD9408-1	09/18/17	07:30	09/21/17	AQ	Ground Water	GW-091817-PG-27
TD9408-2	09/18/17	08:10	09/21/17	AQ	Ground Water	GW-091817-PG-28
TD9408-3	09/18/17	10:00	09/21/17	AQ	Ground Water	GW-091817-PG-29
TD9408-4	09/19/17	08:15	09/21/17	AQ	Ground Water	GW-091917-PG-30
TD9408-4D	09/19/17	08:15	09/21/17	AQ	Water Dup/MSD	GW-091917-PG-30 MSD
TD9408-4S	09/19/17	08:15	09/21/17	AQ	Water Matrix Spike	GW-091917-PG-30 MS
TD9408-5	09/19/17	09:50	09/21/17	AQ	Ground Water	GW-091917-PG-31
TD9408-6	09/19/17	13:35	09/21/17	AQ	Ground Water	GW-091917-PG-32
TD9408-7	09/19/17	14:25	09/21/17	AQ	Ground Water	GW-091917-PG-33
TD9408-8	09/19/17	15:10	09/21/17	AQ	Ground Water	GW-091917-PG-34
TD9408-9	09/19/17	15:40	09/21/17	AQ	Ground Water	GW-091917-PG-35
TD9408-10	09/20/17	09:50	09/21/17	AQ	Ground Water	GW-092017-PG-36
TD9408-11	09/20/17	11:55	09/21/17	AQ	Ground Water	GW-092017-PG-37



Sample Summary
(continued)

GHD Services Inc.

Job No: TD9408

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
TD9408-12	09/20/17	00:00	09/21/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: TD9408
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/18/17 thru 09/20/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD9408-1 GW-091817-PG-27

No hits reported in this sample.

TD9408-2 GW-091817-PG-28

1,1-Dichloroethane	4.0	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	10.5	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	4.4	1.0	ug/l	SW846 8260C
Trichloroethylene	18.8	0.50	ug/l	SW846 8260C

TD9408-3 GW-091817-PG-29

Chloroform	2.3	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	2.3	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	14.0	1.0	ug/l	SW846 8260C
Tetrachloroethylene	4.1	1.0	ug/l	SW846 8260C
Trichloroethylene	61.2	0.50	ug/l	SW846 8260C

TD9408-4 GW-091917-PG-30

cis-1,2-Dichloroethylene	1.5	1.0	ug/l	SW846 8260C
Trichloroethylene	28.8	0.50	ug/l	SW846 8260C

TD9408-5 GW-091917-PG-31

1,1-Dichloroethane	1.4	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	5.7	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	4.1	1.0	ug/l	SW846 8260C
Trichloroethylene	21.7	0.50	ug/l	SW846 8260C

TD9408-6 GW-091917-PG-32

1,1-Dichloroethylene	1.2	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	8.0	1.0	ug/l	SW846 8260C
Trichloroethylene	29.9	0.50	ug/l	SW846 8260C

TD9408-7 GW-091917-PG-33

No hits reported in this sample.

TD9408-8 GW-091917-PG-34

Chloroform	3.6	1.0	ug/l	SW846 8260C
1,1-Dichloroethane	1.6	1.0	ug/l	SW846 8260C

Summary of Hits

Job Number: TD9408
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/18/17 thru 09/20/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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1,1-Dichloroethylene		2.5	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene		6.9	1.0		ug/l	SW846 8260C
Tetrachloroethylene		2.7	1.0		ug/l	SW846 8260C
Trichloroethylene		33.3	0.50		ug/l	SW846 8260C

TD9408-9 GW-091917-PG-35

Chloroform		3.1	1.0		ug/l	SW846 8260C
1,1-Dichloroethane		1.7	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene		2.3	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene		6.8	1.0		ug/l	SW846 8260C
Tetrachloroethylene		3.6	1.0		ug/l	SW846 8260C
Trichloroethylene		29.7	0.50		ug/l	SW846 8260C

TD9408-10 GW-092017-PG-36

1,1-Dichloroethane		4.6	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene		17.8	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene		8.8	1.0		ug/l	SW846 8260C
Trichloroethylene		40.4	0.50		ug/l	SW846 8260C

TD9408-11 GW-092017-PG-37

Chloroform		2.4	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene		1.2	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene		4.9	1.0		ug/l	SW846 8260C
Trichloroethylene		37.7	0.50		ug/l	SW846 8260C

TD9408-12 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-091817-PG-27	Date Sampled:	09/18/17
Lab Sample ID:	TD9408-1	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58616.D	1	09/22/17 17:13	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091817-PG-28	Date Sampled:	09/18/17
Lab Sample ID:	TD9408-2	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58617.D	1	09/22/17 17:37	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	4.0	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	10.5	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	4.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	18.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091817-PG-29	Date Sampled:	09/18/17
Lab Sample ID:	TD9408-3	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58618.D	1	09/22/17 18:01	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.3	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	14.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	4.1	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	61.2	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	103%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-30	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-4	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58612.D	1	09/22/17 15:35	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.5	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	28.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-31	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-5	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58619.D	1	09/22/17 18:25	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.4	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	5.7	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	4.1	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	21.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-32	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-6	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58620.D	1	09/22/17 18:49	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.2	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	8.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	29.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-33	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-7	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58621.D	1	09/22/17 19:14	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-34	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-8	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58622.D	1	09/22/17 19:38	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.6	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.6	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.5	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	6.9	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.7	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	33.3	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-091917-PG-35	Date Sampled:	09/19/17
Lab Sample ID:	TD9408-9	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58623.D	1	09/22/17 20:02	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.1	1.0	ug/l	
75-34-3	1,1-Dichloroethane	1.7	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	6.8	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	3.6	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	29.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092017-PG-36	Date Sampled:	09/20/17
Lab Sample ID:	TD9408-10	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58624.D	1	09/22/17 20:27	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	4.6	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	17.8	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	8.8	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	40.4	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092017-PG-37	Date Sampled:	09/20/17
Lab Sample ID:	TD9408-11	Date Received:	09/21/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58625.D	1	09/22/17 20:51	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.4	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.2	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	4.9	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	37.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/20/17
Lab Sample ID:	TD9408-12	Date Received:	09/21/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58626.D	1	09/22/17 21:15	EM	n/a	n/a	VZ5408
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

[illegible]

4.4.1

TD9408: Chain of Custody

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3.5

SAMPLES CONTAINED IN COOPER

ORIGIN ID:MSCA
CASHLEY LOCUM
ACCUTEST TEMPE SERVICE CENTER
17141 W. UNIVERSITY DR.
SUITE 149
TEMPE, AZ 85281
UNITED STATES US

SHIP DATE: 20SEP17
ACTWGT: 50.00 LB
CAD: 104695527/NET3920
DIMS: 24x20x18 IN
BILL RECIPIENT

TO SAMPLE RECEIVING

ACCUTEST LABORATORIES

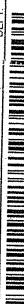
10165 HARWIN DR.

SUITE 150

HOUSTON TX 77071

REF: CLEARCREEK
INV. PO
(713) 271-4700

DEPT.



FedEx.



THU - 21 SEP 10:30A

PRIORITY OVERNIGHT

TRK# 0201 7703 0831 6079

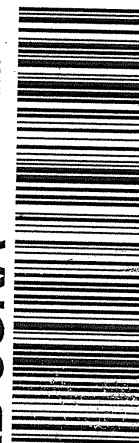
TRK# 0201

DSR

77071

TX-US
IAH

ABSGRA



SGS
Custody Sea

COJTEST
trial Date 9/26

1027-06 Rev 10/24/2016

SGS Accutest Sample Receipt Summary

Page 1 of 3

Job Number: TD9408 Client: GHD Project: OU2
 Date / Time Received: 9/21/2017 10:30:00 AM Delivery Method: Airbill #'s: 770308316079
 No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (3.9/3.9);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation	<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Sample Integrity - Documentation	<u>Y or N</u>		
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition	<u>Y or N</u>		
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions	<u>Y or N</u>	<u>N/A</u>	
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD9408: Chain of Custody

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Sample Receipt Log

Page 2 of 3

Job #: TD9408

Date / Time Received: 9/21/2017 10:30:00 AM 10:3

Initials: BG

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
	TD9408-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
1	TD9408-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
1	TD9408-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.9	0	3.9
	TD9408-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TD9408: Chain of Custody

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Sample Receipt Log

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Job #: TD9408

Date / Time Received: 9/21/2017 10:30:00 AM 10:3

Initials: BG

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
	TD9408-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-8	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-9	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-9	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-9	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-11	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-12	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				
	TD9408-12	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.				

TD9408: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD9408

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5408-MB	Z58607.D	1	09/22/17	EM	n/a	n/a	VZ5408

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9408-1, TD9408-2, TD9408-3, TD9408-4, TD9408-5, TD9408-6, TD9408-7, TD9408-8, TD9408-9, TD9408-10, TD9408-11, TD9408-12

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	98% 72-122%
17060-07-0	1,2-Dichloroethane-D4	107% 68-124%
2037-26-5	Toluene-D8	101% 80-119%
460-00-4	4-Bromofluorobenzene	101% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD9408**Account:** CRAAZP GHD Services Inc.**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5408-BS	Z58605.D	1	09/22/17	EM	n/a	n/a	VZ5408

The QC reported here applies to the following samples:**Method:** SW846 8260C

TD9408-1, TD9408-2, TD9408-3, TD9408-4, TD9408-5, TD9408-6, TD9408-7, TD9408-8, TD9408-9, TD9408-10, TD9408-11, TD9408-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	25.3	101	68-119
75-27-4	Bromodichloromethane	25	22.3	89	72-118
67-66-3	Chloroform	25	24.9	100	73-122
75-34-3	1,1-Dichloroethane	25	23.7	95	72-121
75-35-4	1,1-Dichloroethylene	25	25.0	100	67-140
107-06-2	1,2-Dichloroethane	25	24.9	100	68-121
156-59-2	cis-1,2-Dichloroethylene	25	23.0	92	72-117
156-60-5	trans-1,2-Dichloroethylene	25	23.8	95	68-124
74-83-9	Methyl bromide	25	21.4	86	53-138
74-87-3	Methyl chloride	25	22.3	89	50-145
71-55-6	1,1,1-Trichloroethane	25	23.5	94	72-129
127-18-4	Tetrachloroethylene	25	28.0	112	72-132
108-88-3	Toluene	25	27.0	108	73-119
79-01-6	Trichloroethylene	25	26.4	106	73-121
75-69-4	Trichlorofluoromethane	25	25.7	103	46-152
75-01-4	Vinyl chloride	25	27.4	110	54-126
1330-20-7	Xylene (total)	75	82.6	110	74-119
	m,p-Xylene	50	56.5	113	74-119
95-47-6	o-Xylene	25	26.2	105	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	103%	68-124%
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	101%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9408

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD9408-4MS	Z58613.D	1	09/22/17	EM	n/a	n/a	VZ5408
TD9408-4MSD	Z58614.D	1	09/22/17	EM	n/a	n/a	VZ5408
TD9408-4	Z58612.D	1	09/22/17	EM	n/a	n/a	VZ5408

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9408-1, TD9408-2, TD9408-3, TD9408-4, TD9408-5, TD9408-6, TD9408-7, TD9408-8, TD9408-9, TD9408-10, TD9408-11, TD9408-12

CAS No.	Compound	TD9408-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	24.3	97	25	25.2	101	4	68-119/12
75-27-4	Bromodichloromethane	ND	25	21.7	87	25	22.6	90	4	72-118/16
67-66-3	Chloroform	ND	25	24.2	97	25	24.1	96	0	73-122/13
75-34-3	1,1-Dichloroethane	ND	25	22.6	90	25	23.3	93	3	72-121/14
75-35-4	1,1-Dichloroethylene	ND	25	23.7	95	25	24.1	96	2	67-140/18
107-06-2	1,2-Dichloroethane	ND	25	24.0	96	25	24.5	98	2	68-121/12
156-59-2	cis-1,2-Dichloroethylene	1.5	25	23.8	89	25	24.0	90	1	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	25	22.9	92	25	23.2	93	1	68-124/15
74-83-9	Methyl bromide	ND	25	19.2	77	25	21.3	85	10	53-138/16
74-87-3	Methyl chloride	ND	25	21.3	85	25	21.6	86	1	50-145/17
71-55-6	1,1,1-Trichloroethane	ND	25	22.7	91	25	22.7	91	0	72-129/14
127-18-4	Tetrachloroethylene	ND	25	26.6	106	25	26.7	107	0	72-132/14
108-88-3	Toluene	ND	25	25.6	102	25	25.7	103	0	73-119/13
79-01-6	Trichloroethylene	28.8	25	53.4	98	25	53.9	100	1	73-121/13
75-69-4	Trichlorofluoromethane	ND	25	24.4	98	25	24.5	98	0	46-152/25
75-01-4	Vinyl chloride	ND	25	26.6	106	25	27.3	109	3	54-126/17
1330-20-7	Xylene (total)	ND	75	79.5	106	75	79.1	105	1	74-119/13
	m,p-Xylene	ND	50	54.0	108	50	54.0	108	0	74-119/13
95-47-6	o-Xylene	ND	25	25.5	102	25	25.1	100	2	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD9408-4	Limits
1868-53-7	Dibromofluoromethane	94%	93%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	104%	100%	108%	68-124%
2037-26-5	Toluene-D8	100%	99%	98%	80-119%
460-00-4	4-Bromofluorobenzene	99%	101%	99%	72-126%

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD9543

Sampling Dates: 09/21/17 - 09/22/17


Report to:

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Total number of pages in report: **37**



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD9543

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD9543-1	09/21/17	07:10	09/23/17	AQ	Ground Water	GW-092117-PG-38
TD9543-2	09/21/17	08:25	09/23/17	AQ	Ground Water	GW-092117-PG-39
TD9543-3	09/21/17	08:40	09/23/17	AQ	Ground Water	GW-092117-PG-40
TD9543-4	09/21/17	10:10	09/23/17	AQ	Ground Water	GW-092117-PG-41
TD9543-4D	09/21/17	10:10	09/23/17	AQ	Water Dup/MSD	GW-092117-PG-41 MSD
TD9543-4S	09/21/17	10:10	09/23/17	AQ	Water Matrix Spike	GW-092117-PG-41 MS
TD9543-5	09/21/17	12:15	09/23/17	AQ	Ground Water	GW-092117-PG-42
TD9543-6	09/21/17	12:20	09/23/17	AQ	Ground Water	GW-092117-PG-43
TD9543-7	09/21/17	13:30	09/23/17	AQ	Ground Water	GW-092117-PG-44
TD9543-8	09/22/17	06:45	09/23/17	AQ	Ground Water	GW-092217-PG-45
TD9543-9	09/22/17	07:35	09/23/17	AQ	Ground Water	GW-092217-PG-46
TD9543-10	09/22/17	09:15	09/23/17	AQ	Ground Water	GW-092217-PG-47
TD9543-11	09/22/17	09:50	09/23/17	AQ	Ground Water	GW-092217-PG-48



Sample Summary
(continued)

GHD Services Inc.

Job No: TD9543

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
TD9543-12	09/21/17	00:00	09/23/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: TD9543**Account:** GHD Services Inc.**Project:** 52nd Street Superfund Site - OU2 Area, Phoenix, AZ**Collected:** 09/21/17 thru 09/22/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD9543-1 GW-092117-PG-38

1,1-Dichloroethane	6.1	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	13.3	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	10.8	1.0		ug/l	SW846 8260C
Tetrachloroethylene	1.2	1.0		ug/l	SW846 8260C
Trichloroethylene	56.7	0.50		ug/l	SW846 8260C

TD9543-2 GW-092117-PG-39

No hits reported in this sample.

TD9543-3 GW-092117-PG-40

Chloroform	2.4	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	2.9	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	12.8	1.0		ug/l	SW846 8260C
Tetrachloroethylene	2.9	1.0		ug/l	SW846 8260C
Trichloroethylene	60.6	0.50		ug/l	SW846 8260C

TD9543-4 GW-092117-PG-41

1,1-Dichloroethylene	1.8	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	9.7	1.0		ug/l	SW846 8260C
Tetrachloroethylene	2.0	1.0		ug/l	SW846 8260C
Trichloroethylene	51.9	0.50		ug/l	SW846 8260C

TD9543-5 GW-092117-PG-42

Chloroform	2.8	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	3.1	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	15.2	1.0		ug/l	SW846 8260C
Tetrachloroethylene	2.3	1.0		ug/l	SW846 8260C
Trichloroethylene	82.4	0.50		ug/l	SW846 8260C

TD9543-6 GW-092117-PG-43

Chloroform	2.8	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	3.2	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	15.9	1.0		ug/l	SW846 8260C
Tetrachloroethylene	2.3	1.0		ug/l	SW846 8260C
Trichloroethylene	82.8	0.50		ug/l	SW846 8260C

Summary of Hits

Job Number: TD9543
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/21/17 thru 09/22/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD9543-7 GW-092117-PG-44

Chloroform	5.1	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	8.1	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	37.9	1.0		ug/l	SW846 8260C
Tetrachloroethylene	5.2	1.0		ug/l	SW846 8260C
Trichloroethylene	116	0.50		ug/l	SW846 8260C

TD9543-8 GW-092217-PG-45

No hits reported in this sample.

TD9543-9 GW-092217-PG-46

1,1-Dichloroethylene	1.4	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	11.2	1.0		ug/l	SW846 8260C
Tetrachloroethylene	4.6	1.0		ug/l	SW846 8260C
Trichloroethylene	187	0.50		ug/l	SW846 8260C

TD9543-10 GW-092217-PG-47

No hits reported in this sample.

TD9543-11 GW-092217-PG-48

1,1-Dichloroethylene	23.3	4.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	142	4.0		ug/l	SW846 8260C
Tetrachloroethylene	19.6	4.0		ug/l	SW846 8260C
Trichloroethylene	515	2.0		ug/l	SW846 8260C

TD9543-12 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-092117-PG-38	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-1	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58879.D	1	09/29/17 06:18	ZQ	n/a	n/a	VZ5418
Run #2	K356834.D	1	09/29/17 15:37	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	6.1	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	13.3 ^a	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^a	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	10.8 ^a	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^b	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.2	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	56.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	106%	68-124%
2037-26-5	Toluene-D8	96%	111%	80-119%
460-00-4	4-Bromofluorobenzene	98%	101%	72-126%

(a) Result is from Run# 2

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-39	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-2	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58880.D	1	09/29/17 06:44	ZQ	n/a	n/a	VZ5418
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	95%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-40	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-3	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58881.D	1	09/29/17 07:08	ZQ	n/a	n/a	VZ5418
Run #2	K356835.D	1	09/29/17 16:01	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.4	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.9 ^a	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^a	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	12.8 ^a	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^b	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.9	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	60.6	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	107%	68-124%
2037-26-5	Toluene-D8	97%	110%	80-119%
460-00-4	4-Bromofluorobenzene	97%	101%	72-126%

(a) Result is from Run# 2

(b) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-41	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-4	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58874.D	1	09/29/17 04:15	ZQ	n/a	n/a	VZ5418
Run #2	K356836.D	1	09/29/17 16:26	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.8 ^a	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^a	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	9.7 ^a	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.0	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	51.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	92%	96%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	107%	68-124%
2037-26-5	Toluene-D8	97%	111%	80-119%
460-00-4	4-Bromofluorobenzene	98%	103%	72-126%

(a) Result is from Run# 2

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-42	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-5	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58882.D	1	09/29/17 07:32	ZQ	n/a	n/a	VZ5418
Run #2	K356837.D	1	09/29/17 16:50	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.8	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	3.1 ^b	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^b	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	15.2 ^b	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.3	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	82.4	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	95%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	108%	68-124%
2037-26-5	Toluene-D8	96%	110%	80-119%
460-00-4	4-Bromofluorobenzene	97%	103%	72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

(b) Result is from Run# 2

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-43	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-6	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58883.D	1	09/29/17 07:56	ZQ	n/a	n/a	VZ5418
Run #2	K356838.D	1	09/29/17 17:15	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.8	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	3.2 ^b	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^b	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	15.9 ^b	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	2.3	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	82.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	108%	68-124%
2037-26-5	Toluene-D8	94%	110%	80-119%
460-00-4	4-Bromofluorobenzene	95%	102%	72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

(b) Result is from Run# 2

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092117-PG-44	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-7	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58884.D	1	09/29/17 08:20	ZQ	n/a	n/a	VZ5418
Run #2	K356839.D	1	09/29/17 17:39	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	5.1	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	8.1 ^b	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^b	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	37.9 ^b	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	5.2	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	116	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	110%	109%	68-124%
2037-26-5	Toluene-D8	96%	110%	80-119%
460-00-4	4-Bromofluorobenzene	98%	101%	72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

(b) Result is from Run# 2

ND = Not detected

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092217-PG-45	Date Sampled:	09/22/17
Lab Sample ID:	TD9543-8	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58885.D	1	09/29/17 08:44	ZQ	n/a	n/a	VZ5418
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	95%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092217-PG-46	Date Sampled:	09/22/17
Lab Sample ID:	TD9543-9	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	G0277038.D	1	10/02/17 12:56	ZQ	n/a	n/a	VG2488
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	1.4	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	11.2	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	4.6	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	187	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	92%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	94%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092217-PG-47	Date Sampled:	09/22/17
Lab Sample ID:	TD9543-10	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58887.D	1	09/29/17 09:34	ZQ	n/a	n/a	VZ5418
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	110%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092217-PG-48	Date Sampled:	09/22/17
Lab Sample ID:	TD9543-11	Date Received:	09/23/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58888.D	4	09/29/17 09:59	ZQ	n/a	n/a	VZ5418
Run #2	K356840.D	4	09/29/17 18:04	EM	n/a	n/a	VK2103

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	4.0	ug/l	
75-27-4	Bromodichloromethane	ND	4.0	ug/l	
67-66-3	Chloroform	ND	4.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	4.0	ug/l	
75-35-4	1,1-Dichloroethylene	23.3 ^b	4.0	ug/l	
107-06-2	1,2-Dichloroethane	ND ^b	4.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	142 ^b	4.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	4.0	ug/l	
74-83-9	Methyl bromide	ND	8.0	ug/l	
74-87-3	Methyl chloride	ND	8.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	4.0	ug/l	
127-18-4	Tetrachloroethylene	19.6	4.0	ug/l	
108-88-3	Toluene	ND	4.0	ug/l	
79-01-6	Trichloroethylene	515	2.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	16	ug/l	
75-01-4	Vinyl chloride	ND	2.0	ug/l	
1330-20-7	Xylene (total)	ND	4.0	ug/l	
	m,p-Xylene	ND	4.0	ug/l	
95-47-6	o-Xylene	ND	2.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	110%	68-124%
2037-26-5	Toluene-D8	96%	110%	80-119%
460-00-4	4-Bromofluorobenzene	96%	101%	72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

(b) Result is from Run# 2

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/21/17
Lab Sample ID:	TD9543-12	Date Received:	09/23/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z58878.D	1	09/29/17 05:53	ZQ	n/a	n/a	VZ5418
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane ^a	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene ^a	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene ^a	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	105%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	97%		72-126%

(a) CCV recovery was below method acceptance criteria. Low check standard confirms detectability. AZ:N1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD9543
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
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N1 See case narrative.

4.1
4



PHOENIX

CHAIN OF CUSTODY

PAGE 1 OF 1

ACCUTEST

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking # 71032773 3858		Bottle Order Control #	
SGS Accutest Quote #		SGS Accutest Job # TD9543	
Client / Reporting Information		Project Information	
Company Name GHD		Project Name:	
Street Address		Street	
City State Zip		City State	
Project Contact MANFRED PLASCHKE		Project # 013932-130	
Phone #		Client Purchase Order #	
Fax #		City State Zip	
Sampler(s) Name(s) PATRICK GREENE		Project Manager	
Phone #		Attention:	
SGS Accutest Sample #		Collection	
Field ID / Point of Collection		Date Time Sampled By Matrix # of bottles	
1 GW-072117-PG-38		9/21/17 0710 PG GW 3	
2		39 0825 3	
3		40 0840 3	
4		41 1010 9	
5		42 1215 3	
6		43 1220 3	
7		44 1330 3	
8 GW-072217-PG-45		9/22/17 0645 3	
9		46 0735 3	
10		47 0915 3	
11		48 0950 3	
12 TRIP BLANK		WG 2	
Turnaround Time (Business days)		Data Deliverable Information	
<input checked="" type="checkbox"/> Standard <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY		Approved By (SGS Accutest PM): / Date: _____ _____ _____ _____ _____ _____ Emergency & Rush T/A data available VIA Lablink	
		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> REOT1 (Level 3+4) <input type="checkbox"/> Commercial "C" Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary	
		TRRP EDD Format Other _____	
		VERIFIED BY: <u>AE</u>	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By: <u>1 Ashley Pourn</u>	Date Time: <u>9/22/17 1150</u>	Relinquished By: <u>2 Ashley Pourn</u>	Date Time: <u>9/22/17 1600</u>
Relinquished By: <u>3</u>	Date Time: <u>9/22/17 1000</u>	Relinquished By: <u>4</u>	Date Time: <u>9/22/17 1000</u>
Relinquished By: <u>5</u>	Date Time: <u>9/22/17 1000</u>	Custody Seal # <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice <input type="checkbox"/> Cooler Temp

TD9543: Chain of Custody

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SGS ACCUTEST

COOLER TEMP FORM

TC# TD9543

Delivered by (circle one): ALGC Driver Client

Date: 9-23-18

Client: _____

Cooler Number: _____
Thermometer ID: 125 CF, °C 00 Corrected Temp, °C 00

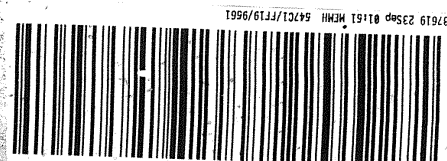
SAMPLES CONTAINED IN COOLER

All 40ml vials in
one cooler
also 2 TRIP BLANK
38 vials w/ HCL
39
40
41 # 9 vials
42
43
44
45
46 95
47
48
2 TRIP BLANK

SGS
ACCUTEST
Custody Seal Initial & Date 9/22

SATURDAY 12:00P
PRIORITY OVERNIGHT
DSR
77071
TX-LS
IAH

X0 SGRA
7703 2773 3858
IHK# 0201



237619 23Sep 01161 MEH 64701/FF19/9661

Form:

SGS Accutest Laboratories Sample Receipt Summary

Page 1 of 4

Job Number: TD9543 Client: GHD Project: 8260
Date / Time Received: 9/23/2017 10:00:00 AM Delivery Method: Airbill #'s: 770327733858
No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
Cooler Temps (Initial/Adjusted): #1: (0.8/0.8);

Cooler Security

	Y	or	N		Y	or	N
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

Cooler Temperature

	Y	or	N
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:			
3. Cooler media:			Ice (Bag)

Quality Control Preservation

	Y	or	N	N/A	WTB	STB
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation

	Y	or	N
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input type="checkbox"/>		<input checked="" type="checkbox"/>

Sample Integrity - Condition

	Y	or	N
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:			Intact

Sample Integrity - Instructions

	Y	or	N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments COC says gw-092217-pg 46 but bottle label says pg-45. Date and time match 09-22-17/0735.

TD9543: Chain of Custody

Page 3 of 6

Problem Resolution

Page 2 of 4

Job Number: TD9543

CSR: _____

Response Date: _____

Response:

4.2

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TD9543: Chain of Custody
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Sample Receipt Log

Page 3 of 4

Job #: TD9543

Date / Time Received: 9/23/2017 10:00:00 AM

Initials: EC

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9543-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	7	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	8	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-4	40ml	9	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8

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TD9543: Chain of Custody

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Sample Receipt Log

Page 4 of 4

Job #: TD9543

Date / Time Received: 9/23/2017 10:00:00 AM

Initials: EC

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9543-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-8	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-9	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-9	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-9	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-11	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-12	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8
1	TD9543-12	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	0.8	0	0.8

4.2
4

TD9543: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5418-MB	Z58873.D	1	09/29/17	ZQ	n/a	n/a	VZ5418

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-2, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-8, TD9543-10, TD9543-11, TD9543-12

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	94% 72-122%
17060-07-0	1,2-Dichloroethane-D4	108% 68-124%
2037-26-5	Toluene-D8	99% 80-119%
460-00-4	4-Bromofluorobenzene	98% 72-126%

Method Blank Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2103-MB	K356829.D	1	09/29/17	EM	n/a	n/a	VK2103

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-11

CAS No.	Compound	Result	RL	Units	Q
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	97% 72-122%
17060-07-0	1,2-Dichloroethane-D4	106% 68-124%
2037-26-5	Toluene-D8	111% 80-119%
460-00-4	4-Bromofluorobenzene	102% 72-126%

Method Blank Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2488-MB	G0277032.D	1	10/02/17	ZQ	n/a	n/a	VG2488

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-9

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	97% 72-122%
17060-07-0	1,2-Dichloroethane-D4	93% 68-124%
2037-26-5	Toluene-D8	102% 80-119%
460-00-4	4-Bromofluorobenzene	95% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5418-BS	Z58870.D	1	09/29/17	ZQ	n/a	n/a	VZ5418

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-2, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-8, TD9543-10, TD9543-11, TD9543-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.2	93	68-119
75-27-4	Bromodichloromethane	25	22.4	90	72-118
67-66-3	Chloroform	25	22.6	90	73-122
75-34-3	1,1-Dichloroethane	25	21.1	84	72-121
75-35-4	1,1-Dichloroethylene	25	22.1	88	67-140
107-06-2	1,2-Dichloroethane	25	24.2	97	68-121
156-59-2	cis-1,2-Dichloroethylene	25	20.8	83	72-117
156-60-5	trans-1,2-Dichloroethylene	25	20.8	83	68-124
74-83-9	Methyl bromide	25	19.6	78	53-138
74-87-3	Methyl chloride	25	16.8	67	50-145
71-55-6	1,1,1-Trichloroethane	25	21.8	87	72-129
127-18-4	Tetrachloroethylene	25	25.8	103	72-132
108-88-3	Toluene	25	24.5	98	73-119
79-01-6	Trichloroethylene	25	24.0	96	73-121
75-69-4	Trichlorofluoromethane	25	24.6	98	46-152
75-01-4	Vinyl chloride	25	18.5	74	54-126
1330-20-7	Xylene (total)	75	76.9	103	74-119
	m,p-Xylene	50	52.3	105	74-119
95-47-6	o-Xylene	25	24.6	98	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	93%	72-122%
17060-07-0	1,2-Dichloroethane-D4	102%	68-124%
2037-26-5	Toluene-D8	99%	80-119%
460-00-4	4-Bromofluorobenzene	96%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2103-BS	K356826.D	1	09/29/17	EM	n/a	n/a	VK2103

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-11

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-35-4	1,1-Dichloroethylene	25	24.0	96	67-140
107-06-2	1,2-Dichloroethane	25	21.3	85	68-121
156-59-2	cis-1,2-Dichloroethylene	25	21.8	87	72-117

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	72-122%
17060-07-0	1,2-Dichloroethane-D4	105%	68-124%
2037-26-5	Toluene-D8	111%	80-119%
460-00-4	4-Bromofluorobenzene	102%	72-126%

* = Outside of Control Limits.

Blank Spike Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VG2488-BS	G0277030.D	1	10/02/17	ZQ	n/a	n/a	VG2488

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-9

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	21.8	87	68-119
75-27-4	Bromodichloromethane	25	21.2	85	72-118
67-66-3	Chloroform	25	21.1	84	73-122
75-34-3	1,1-Dichloroethane	25	23.0	92	72-121
75-35-4	1,1-Dichloroethylene	25	20.6	82	67-140
107-06-2	1,2-Dichloroethane	25	20.7	83	68-121
156-59-2	cis-1,2-Dichloroethylene	25	23.1	92	72-117
156-60-5	trans-1,2-Dichloroethylene	25	22.7	91	68-124
74-83-9	Methyl bromide	25	21.4	86	53-138
74-87-3	Methyl chloride	25	19.6	78	50-145
71-55-6	1,1,1-Trichloroethane	25	22.1	88	72-129
127-18-4	Tetrachloroethylene	25	23.2	93	72-132
108-88-3	Toluene	25	22.1	88	73-119
79-01-6	Trichloroethylene	25	22.2	89	73-121
75-69-4	Trichlorofluoromethane	25	20.9	84	46-152
75-01-4	Vinyl chloride	25	21.4	86	54-126
1330-20-7	Xylene (total)	75	65.8	88	74-119
	m,p-Xylene	50	44.3	89	74-119
95-47-6	o-Xylene	25	21.4	86	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	72-122%
17060-07-0	1,2-Dichloroethane-D4	93%	68-124%
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	97%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD9543-4MS	Z58875.D	1	09/29/17	ZQ	n/a	n/a	VZ5418
TD9543-4MSD	Z58876.D	1	09/29/17	ZQ	n/a	n/a	VZ5418
TD9543-4	Z58874.D	1	09/29/17	ZQ	n/a	n/a	VZ5418

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-2, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-8, TD9543-10, TD9543-11, TD9543-12

CAS No.	Compound	TD9543-4 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	22.5	90	25	26.1	104	15*	68-119/12
75-27-4	Bromodichloromethane	ND	25	21.2	85	25	24.4	98	14	72-118/16
67-66-3	Chloroform	0.51	25	22.6	88	25	27.0	106	18*	73-122/13
75-34-3	1,1-Dichloroethane	0.75	25	20.8	80	25	24.8	96	18*	72-121/14
75-35-4	1,1-Dichloroethylene	1.3	25	23.7	90	25	29.0	111	20*	67-140/18
107-06-2	1,2-Dichloroethane	ND	25	23.3	93	25	26.3	105	12	68-121/12
156-59-2	cis-1,2-Dichloroethylene	7.8	25	26.8	76	25	31.5	95	16*	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	25	20.5	82	25	23.9	96	15	68-124/15
74-83-9	Methyl bromide	ND	25	23.3	93	25	31.5	126	30*	53-138/16
74-87-3	Methyl chloride	ND	25	17.1	68	25	23.8	95	33*	50-145/17
71-55-6	1,1,1-Trichloroethane	ND	25	20.2	81	25	23.2	93	14	72-129/14
127-18-4	Tetrachloroethylene	2.0	25	28.3	105	25	32.2	121	13	72-132/14
108-88-3	Toluene	ND	25	24.0	96	25	27.5	110	14*	73-119/13
79-01-6	Trichloroethylene	51.9	25	73.0	84	25	82.4	122* a	12	73-121/13
75-69-4	Trichlorofluoromethane	ND	25	27.2	109	25	35.0	140	25	46-152/25
75-01-4	Vinyl chloride	ND	25	19.6	78	25	26.2	105	29*	54-126/17
1330-20-7	Xylene (total)	ND	75	74.5	99	75	84.5	113	13	74-119/13
	m,p-Xylene	ND	50	50.8	102	50	57.7	115	13	74-119/13
95-47-6	o-Xylene	ND	25	23.7	95	25	26.8	107	12	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD9543-4	Limits
1868-53-7	Dibromofluoromethane	90%	93%	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	102%	100%	109%	68-124%
2037-26-5	Toluene-D8	97%	96%	97%	80-119%
460-00-4	4-Bromofluorobenzene	97%	98%	98%	72-126%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD9319-2MS	K356831.D	10	09/29/17	EM	n/a	n/a	VK2103
TD9319-2MSD	K356832.D	10	09/29/17	EM	n/a	n/a	VK2103
TD9319-2 ^a	K356830.D	10	09/29/17	EM	n/a	n/a	VK2103

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-1, TD9543-3, TD9543-4, TD9543-5, TD9543-6, TD9543-7, TD9543-11

CAS No.	Compound	TD9319-2 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-35-4	1,1-Dichloroethylene	26.1	250	267	96	250	280	102	5	67-140/18
107-06-2	1,2-Dichloroethane	ND	250	217	87	250	224	90	3	68-121/12
156-59-2	cis-1,2-Dichloroethylene	9.1	250	229	88	250	242	93	6	72-117/13

CAS No.	Surrogate Recoveries	MS	MSD	TD9319-2	Limits
1868-53-7	Dibromofluoromethane	100%	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	108%	105%		68-124%
2037-26-5	Toluene-D8	111%	111%		80-119%
460-00-4	4-Bromofluorobenzene	103%	104%		72-126%

(a) Sample used for QC purposes only.

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD9543

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD9319-7MS	G0277039.D	10	10/02/17	ZQ	n/a	n/a	VG2488
TD9319-7MSD	G0277040.D	10	10/02/17	ZQ	n/a	n/a	VG2488
TD9319-7	G0277036.D	10	10/02/17	ZQ	n/a	n/a	VG2488

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9543-9

CAS No.	Compound	TD9319-7 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	250	217	87	250	226	90	4	68-119/12
75-27-4	Bromodichloromethane	ND	250	207	83	250	218	87	5	72-118/16
67-66-3	Chloroform	ND	250	215	86	250	224	90	4	73-122/13
75-34-3	1,1-Dichloroethane	ND	250	231	92	250	239	96	3	72-121/14
75-35-4	1,1-Dichloroethylene	708	250	866	63* a	250	958	100	10	67-140/18
107-06-2	1,2-Dichloroethane	ND	250	206	82	250	215	86	4	68-121/12
156-59-2	cis-1,2-Dichloroethylene	148	250	372	90	250	403	102	8	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	250	227	91	250	237	95	4	68-124/15
74-83-9	Methyl bromide	ND	250	258	103	250	282	113	9	53-138/16
74-87-3	Methyl chloride	ND	250	242	97	250	260	104	7	50-145/17
71-55-6	1,1,1-Trichloroethane	1300	250	1460	64* a	250	1640	136* a	12	72-129/14
127-18-4	Tetrachloroethylene	575	250	771	78	250	851	110	10	72-132/14
108-88-3	Toluene	ND	250	220	88	250	232	93	5	73-119/13
79-01-6	Trichloroethylene	1300	250	1470	68* a	250	1640	136* a	11	73-121/13
75-69-4	Trichlorofluoromethane	ND	250	266	106	250	283	113	6	46-152/25
75-01-4	Vinyl chloride	ND	250	265	106	250	287	115	8	54-126/17
1330-20-7	Xylene (total)	ND	750	651	87	750	682	91	5	74-119/13
	m,p-Xylene	ND	500	438	88	500	459	92	5	74-119/13
95-47-6	o-Xylene	ND	250	213	85	250	223	89	5	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD9319-7	Limits
1868-53-7	Dibromofluoromethane	97%	97%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	93%	93%	92%	68-124%
2037-26-5	Toluene-D8	100%	101%	102%	80-119%
460-00-4	4-Bromofluorobenzene	98%	97%	95%	72-126%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD9826

Sampling Dates: 09/26/17 - 09/27/17


Report to:

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Total number of pages in report: 28



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD9826

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD9826-1	09/27/17	08:40	09/28/17	AQ	Ground Water	GW-092517-PG-49
TD9826-2	09/27/17	10:15	09/28/17	AQ	Ground Water	GW-092517-PG-50
TD9826-3	09/27/17	13:30	09/28/17	AQ	Ground Water	GW-092517-PG-51
TD9826-4	09/26/17	08:30	09/28/17	AQ	Ground Water	GW-092617-PG-52
TD9826-5	09/26/17	09:45	09/28/17	AQ	Ground Water	GW-092617-PG-53
TD9826-6	09/26/17	10:45	09/28/17	AQ	Ground Water	GW-092617-PG-54
TD9826-7	09/26/17	13:30	09/28/17	AQ	Ground Water	GW-092617-PG-55
TD9826-8	09/27/17	08:30	09/28/17	AQ	Ground Water	GW-092717-PG-56
TD9826-9	09/27/17	11:30	09/28/17	AQ	Ground Water	GW-092717-PG-57
TD9826-10	09/27/17	14:20	09/28/17	AQ	Ground Water	GW-092717-PG-58
TD9826-11	09/27/17	14:25	09/28/17	AQ	Ground Water	GW-092717-PG-59
TD9826-12	09/27/17	00:00	09/28/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: TD9826
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/26/17 thru 09/27/17

Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
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TD9826-1 GW-092517-PG-49

No hits reported in this sample.

TD9826-2 GW-092517-PG-50

No hits reported in this sample.

TD9826-3 GW-092517-PG-51

1,1-Dichloroethylene	2.4	1.0	ug/l	SW846 8260C
Trichloroethylene	2.7	0.50	ug/l	SW846 8260C

TD9826-4 GW-092617-PG-52

Trichloroethylene	3.3	0.50	ug/l	SW846 8260C
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TD9826-5 GW-092617-PG-53

No hits reported in this sample.

TD9826-6 GW-092617-PG-54

Trichloroethylene	2.5	0.50	ug/l	SW846 8260C
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TD9826-7 GW-092617-PG-55

Chloroform	1.1	1.0	ug/l	SW846 8260C
Trichloroethylene	2.6	0.50	ug/l	SW846 8260C

TD9826-8 GW-092717-PG-56

1,1-Dichloroethylene	5.2	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	3.0	1.0	ug/l	SW846 8260C
Trichloroethylene	13.2	0.50	ug/l	SW846 8260C

TD9826-9 GW-092717-PG-57

Chloroform	5.0	1.0	ug/l	SW846 8260C
Trichloroethylene	13.3	0.50	ug/l	SW846 8260C

TD9826-10 GW-092717-PG-58

cis-1,2-Dichloroethylene	1.1	1.0	ug/l	SW846 8260C
Trichloroethylene	36.7	0.50	ug/l	SW846 8260C

Summary of Hits

Job Number: TD9826
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 09/26/17 thru 09/27/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

TD9826-11 GW-092717-PG-59

cis-1,2-Dichloroethylene	1.0	1.0		ug/l	SW846 8260C
Trichloroethylene	34.8	0.50		ug/l	SW846 8260C

TD9826-12 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-092517-PG-49	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-1	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240780.D	1	10/04/17 01:43	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	103%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092517-PG-50	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-2	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240781.D	1	10/04/17 02:10	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		72-122%
17060-07-0	1,2-Dichloroethane-D4	111%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092517-PG-51	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-3	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240782.D	1	10/04/17 02:36	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.4	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092617-PG-52	Date Sampled:	09/26/17
Lab Sample ID:	TD9826-4	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240783.D	1	10/04/17 03:03	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	3.3	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092617-PG-53	Date Sampled:	09/26/17
Lab Sample ID:	TD9826-5	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240784.D	1	10/04/17 03:30	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092617-PG-54	Date Sampled:	09/26/17
Lab Sample ID:	TD9826-6	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240785.D	1	10/04/17 03:56	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.5	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		72-122%
17060-07-0	1,2-Dichloroethane-D4	116%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092617-PG-55	Date Sampled:	09/26/17
Lab Sample ID:	TD9826-7	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240786.D	1	10/04/17 04:23	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.1	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	2.6	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092717-PG-56	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-8	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240787.D	1	10/04/17 04:49	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	5.2	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	3.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	13.2	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

ND = Not detected
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092717-PG-57	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-9	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240788.D	1	10/04/17 05:16	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	5.0	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	13.3	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		72-122%
17060-07-0	1,2-Dichloroethane-D4	118%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	104%		72-126%

(a) AZ:V1

ND = Not detected
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 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092717-PG-58	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-10	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240789.D	1	10/04/17 05:42	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.1	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	36.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		72-122%
17060-07-0	1,2-Dichloroethane-D4	116%		68-124%
2037-26-5	Toluene-D8	96%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092717-PG-59	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-11	Date Received:	09/28/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240790.D	1	10/04/17 06:09	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	1.0	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	34.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	09/27/17
Lab Sample ID:	TD9826-12	Date Received:	09/28/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240791.D	1	10/04/17 06:35	EM	n/a	n/a	VX3375
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%		72-122%
17060-07-0	1,2-Dichloroethane-D4	116%		68-124%
2037-26-5	Toluene-D8	97%		80-119%
460-00-4	4-Bromofluorobenzene	106%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD9826
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
Q9	Insufficient sample received to meet method QC requirements.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

4.1
4

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acutest.com

FED-EX Tracking # 79036520 0338	Bottle Order Control #	
SGS Account Quote #	SGS Accutest Job # TD9826	
Requested Analyses		Matrix Codes
		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank
		LAB USE ONLY
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
Comments / Special Instructions		
Date Summary		
Including courier delivery.		
Date Time: 9/27/17 1630	Received By: 2 Ted Ex 9/27/17	Date Time: 1630
Date Time:	Received By:	Date Time:
	4	
Intact	On Ice	Cooler Temp
Not intact		3.3

4.2

TD9826: Chain of Custody

Page 1 of 5

ACCU TEST

COOLER TEMP FORM

#TC#

Delivered by (circle one):

FedEx/UPS

ALGC Driver

Client

Date:

$$9/28/17$$

Client: _____

6 HD

Cooler Number:

Thermometer ID: _____

585

CF, °C 0.2

Corrected Temp, °C

330

SAMPLES CONTAINED IN COOLER

TRK# 0201

7703 6520 0338

AB S GRA

TX-US 77011 1AH

TX-US 77011 1AH

ACCUTEST

Initials Date 9/27/17

Initials Date 9/27/17

Form: SM027-06 Rev 10/24/2016

SGS Accutest Sample Receipt Summary

Page 1 of 3

Job Number: TD9826 Client: GHD Project: OU2
 Date / Time Received: Delivery Method: Airbill #'s: 770365200338
 No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (3.3/3.3);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation		<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD9826: Chain of Custody
 Page 3 of 5

Sample Receipt Log

Page 2 of 3

Job #: TD9826

Date / Time Received: 9/28/2017 9:55:00 AM

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9826-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-4	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-5	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-5	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-5	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-6	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-6	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-6	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-7	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-7	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-7	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-8	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-8	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3

TD9826: Chain of Custody

Page 4 of 5

Sample Receipt Log

Page 3 of 3

Job #: TD9826

Date / Time Received: 9/28/2017 9:55:00 AM

Initials: DS

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD9826-8	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-9	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-9	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-9	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-10	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-10	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-10	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-11	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-11	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-11	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-12	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3
1	TD9826-12	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	3.3	0	3.3

TD9826: Chain of Custody

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MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD9826

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3375-MB	X01240779.D	1	10/04/17	EM	n/a	n/a	VX3375

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9826-1, TD9826-2, TD9826-3, TD9826-4, TD9826-5, TD9826-6, TD9826-7, TD9826-8, TD9826-9, TD9826-10, TD9826-11, TD9826-12

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	104% 72-122%
17060-07-0	1,2-Dichloroethane-D4	113% 68-124%
2037-26-5	Toluene-D8	97% 80-119%
460-00-4	4-Bromofluorobenzene	104% 72-126%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD9826

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3375-BS	X01240775.D	1	10/03/17	EM	n/a	n/a	VX3375
VX3375-BSD ^a	X01240776.D	1	10/03/17	EM	n/a	n/a	VX3375

The QC reported here applies to the following samples:

Method: SW846 8260C

TD9826-1, TD9826-2, TD9826-3, TD9826-4, TD9826-5, TD9826-6, TD9826-7, TD9826-8, TD9826-9, TD9826-10, TD9826-11, TD9826-12

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	24.2	97	24.0	96	1	68-119/30
75-27-4	Bromodichloromethane	25	23.0	92	22.4	90	3	72-118/30
67-66-3	Chloroform	25	24.7	99	22.6	90	9	73-122/30
75-34-3	1,1-Dichloroethane	25	23.9	96	23.2	93	3	72-121/30
75-35-4	1,1-Dichloroethylene	25	27.8	111	25.0	100	11	67-140/30
107-06-2	1,2-Dichloroethane	25	27.2	109	26.1	104	4	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	26.6	106	25.6	102	4	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	23.6	94	22.8	91	3	68-124/30
74-83-9	Methyl bromide	25	33.0	132	33.4	134	1	53-138/30
74-87-3	Methyl chloride	25	24.0	96	23.0	92	4	50-145/30
71-55-6	1,1,1-Trichloroethane	25	23.5	94	22.5	90	4	72-129/30
127-18-4	Tetrachloroethylene	25	22.5	90	22.0	88	2	72-132/30
108-88-3	Toluene	25	23.2	93	22.6	90	3	73-119/30
79-01-6	Trichloroethylene	25	24.6	98	24.0	96	2	73-121/30
75-69-4	Trichlorofluoromethane	25	28.4	114	28.4	114	0	46-152/30
75-01-4	Vinyl chloride	25	23.9	96	23.3	93	3	54-126/30
1330-20-7	Xylene (total)	75	68.4	91	66.3	88	3	74-119/30
	m,p-Xylene	50	46.9	94	45.4	91	3	74-119/30
95-47-6	o-Xylene	25	21.6	86	21.0	84	3	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	106%	106%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	107%	68-124%
2037-26-5	Toluene-D8	97%	97%	80-119%
460-00-4	4-Bromofluorobenzene	103%	105%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932-130

SGS Accutest Job Number: TD10118

Sampling Dates: 09/28/17 - 10/03/17


Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
Phoenix, AZ 85016
manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com; brooks.dillard@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: **19**



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD10118

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932-130

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD10118-1	09/28/17	10:10	10/04/17	AQ	Ground Water	GW-092817-PG-60
TD10118-1D	09/28/17	10:10	10/04/17	AQ	Water Dup/MSD	GW-092817-PG-60 MSD
TD10118-1S	09/28/17	10:10	10/04/17	AQ	Water Matrix Spike	GW-092817-PG-60 MS
TD10118-2	09/28/17	14:00	10/04/17	AQ	Ground Water	GW-092817-PG-61
TD10118-3	10/03/17	13:45	10/04/17	AQ	Ground Water	GW-100317-PG-62
TD10118-4	10/03/17	00:00	10/04/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Page 1 of 1

Job Number: TD10118

Account: GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Collected: 09/28/17 thru 10/03/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

TD10118-1 GW-092817-PG-60

Chloroform	1.2	1.0	ug/l	SW846 8260C
1,1-Dichloroethane	12.2	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	29.3	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	18.1	1.0	ug/l	SW846 8260C
Trichloroethylene	97.9	0.50	ug/l	SW846 8260C

TD10118-2 GW-092817-PG-61

Chloroform	3.5	1.0	ug/l	SW846 8260C
1,1-Dichloroethylene	4.5	1.0	ug/l	SW846 8260C
cis-1,2-Dichloroethylene	19.4	1.0	ug/l	SW846 8260C
Tetrachloroethylene	1.5	1.0	ug/l	SW846 8260C
Trichloroethylene	46.3	0.50	ug/l	SW846 8260C

TD10118-3 GW-100317-PG-62

No hits reported in this sample.

TD10118-4 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-092817-PG-60	Date Sampled:	09/28/17
Lab Sample ID:	TD10118-1	Date Received:	10/04/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240860.D	1	10/05/17 14:09	EM	n/a	n/a	VX3379
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	1.2	1.0	ug/l	
75-34-3	1,1-Dichloroethane	12.2	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	29.3	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	18.1	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	97.9	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	98%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-092817-PG-61	Date Sampled:	09/28/17
Lab Sample ID:	TD10118-2	Date Received:	10/04/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240864.D	1	10/05/17 15:54	EM	n/a	n/a	VX3379
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	3.5	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	4.5	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	19.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	1.5	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	46.3	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	112%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	101%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-100317-PG-62	Date Sampled:	10/03/17
Lab Sample ID:	TD10118-3	Date Received:	10/04/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	X01240865.D	1	10/05/17 16:21	EM	n/a	n/a	VX3379
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^b	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^b	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	109%		68-124%
2037-26-5	Toluene-D8	102%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:Q2

(b) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	10/03/17
Lab Sample ID:	TD10118-4	Date Received:	10/04/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	X01240866.D	1	10/05/17 16:47	EM	n/a	n/a	VX3379
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide ^a	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane ^a	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	101%		80-119%
460-00-4	4-Bromofluorobenzene	102%		72-126%

(a) AZ:V1

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD10118
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
Q2	Sample received with head space.
V1	CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

4.1
4

10165 Harwin Dr., Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.acctest.com

FED-EX Tracking # 1094 0398

Bottle Order Control #

SGS Acquist Quote #

SGS Accutest Job #

[illegible]

4.2

TD10118: Chain of Custody

Page 1 of 4

SGS
TD10118

ACCUTEST

COOLER TEMP FORM

TC#

Delivered by (circle one):

FedEx/UPS

ALGC Driver

Client

Date:

10-4-17

Client:

GTD

Cooler Number:

DL5

CF, °C

0

Corrected Temp, °C

1.4

Thermometer ID:

ORIGIN/DMSCA (480) 275-8831
ASHLEY LOGUM
ACCUTEST TEMPERATURE SERVICE CENTER
SUITE 140 UNIVERSITY DR
TEMPE, AZ 85281
UNITED STATES US

TO SAMPLE RECEIVING

ACCUTEST LABORATORIES

10165 HARWIN DR.

SUITE 150

HOUSTON TX 77071

(713) 271-4700

REF CLEARCREEK

PO

DEPT

SHIP DATE: 03OCT17
ACT WT: 25.00 LB
GROSS: 24.995571 NET 3920
DIM: 24X20X18 IN
BILL RECIPIENT

549J3W/699104C

218
10:30
A
10:00

FedEx
Express



WED - 04 OCT 10:30A
PRIORITY OVERNIGHT

7704 1094 4398

TRK#

AB SGRA

DSR
77071
IAH

TX-US



SGS Accutest Sample Receipt Summary

Page 1 of 2

Job Number: TD10118 Client: GHD Project: 042
 Date / Time Received: Delivery Method: Airbill #'s: 770410944398
 No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (1.4/1.4);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation		<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD10118: Chain of Custody
 Page 3 of 4

Sample Receipt Log

Page 2 of 2

Job #: TD10118

Date / Time Received: 10/4/2017 10:20:00 AM

Initials: BG

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10118-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-1	40ml	4	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-1	40ml	5	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-1	40ml	6	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-3	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-4	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4
1	TD10118-4	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	1.4	0	1.4

TD10118: Chain of Custody

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MS Volatiles

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD10118

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3379-MB	X01240859.D	1	10/05/17	EM	n/a	n/a	VX3379

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10118-1, TD10118-2, TD10118-3, TD10118-4

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	99% 72-122%
17060-07-0	1,2-Dichloroethane-D4	109% 68-124%
2037-26-5	Toluene-D8	98% 80-119%
460-00-4	4-Bromofluorobenzene	102% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD10118

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VX3379-BS	X01240857.D	1	10/05/17	EM	n/a	n/a	VX3379

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10118-1, TD10118-2, TD10118-3, TD10118-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.0	92	68-119
75-27-4	Bromodichloromethane	25	21.1	84	72-118
67-66-3	Chloroform	25	20.9	84	73-122
75-34-3	1,1-Dichloroethane	25	21.7	87	72-121
75-35-4	1,1-Dichloroethylene	25	27.7	111	67-140
107-06-2	1,2-Dichloroethane	25	25.0	100	68-121
156-59-2	cis-1,2-Dichloroethylene	25	23.9	96	72-117
156-60-5	trans-1,2-Dichloroethylene	25	28.3	113	68-124
74-83-9	Methyl bromide	25	34.2	137	53-138
74-87-3	Methyl chloride	25	24.1	96	50-145
71-55-6	1,1,1-Trichloroethane	25	21.3	85	72-129
127-18-4	Tetrachloroethylene	25	21.7	87	72-132
108-88-3	Toluene	25	21.8	87	73-119
79-01-6	Trichloroethylene	25	23.2	93	73-121
75-69-4	Trichlorofluoromethane	25	31.7	127	46-152
75-01-4	Vinyl chloride	25	25.7	103	54-126
1330-20-7	Xylene (total)	75	64.4	86	74-119
	m,p-Xylene	50	43.8	88	74-119
95-47-6	o-Xylene	25	20.6	82	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	106%	68-124%
2037-26-5	Toluene-D8	97%	80-119%
460-00-4	4-Bromofluorobenzene	104%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD10118

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10118-1MS	X01240861.D	1	10/05/17	EM	n/a	n/a	VX3379
TD10118-1MSD	X01240862.D	1	10/05/17	EM	n/a	n/a	VX3379
TD10118-1	X01240860.D	1	10/05/17	EM	n/a	n/a	VX3379

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10118-1, TD10118-2, TD10118-3, TD10118-4

CAS No.	Compound	TD10118-1 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	25	22.6	90	25	23.4	94	3	68-119/12
75-27-4	Bromodichloromethane	0.40	25	21.1	83	25	21.8	86	3	72-118/16
67-66-3	Chloroform	1.2	25	22.2	84	25	22.8	86	3	73-122/13
75-34-3	1,1-Dichloroethane	12.2	25	33.8	86	25	35.3	92	4	72-121/14
75-35-4	1,1-Dichloroethylene	29.3	25	53.5	97	25	58.2	116	8	67-140/18
107-06-2	1,2-Dichloroethane	ND	25	25.3	101	25	25.6	102	1	68-121/12
156-59-2	cis-1,2-Dichloroethylene	18.1	25	42.7	98	25	44.3	105	4	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	25	21.7	87	25	22.3	89	3	68-124/15
74-83-9	Methyl bromide	ND	25	32.5	130	25	36.2	145*	11	53-138/16
74-87-3	Methyl chloride	ND	25	21.3	85	25	25.6	102	18*	50-145/17
71-55-6	1,1,1-Trichloroethane	ND	25	20.9	84	25	21.6	86	3	72-129/14
127-18-4	Tetrachloroethylene	0.74	25	22.7	88	25	23.8	92	5	72-132/14
108-88-3	Toluene	ND	25	21.7	87	25	22.9	92	5	73-119/13
79-01-6	Trichloroethylene	97.9	25	122	96	25	126	112	3	73-121/13
75-69-4	Trichlorofluoromethane	ND	25	27.8	111	25	30.8	123	10	46-152/25
75-01-4	Vinyl chloride	ND	25	22.2	89	25	26.4	106	17	54-126/17
1330-20-7	Xylene (total)	ND	75	64.2	86	75	66.5	89	4	74-119/13
	m,p-Xylene	ND	50	43.5	87	50	45.1	90	4	74-119/13
95-47-6	o-Xylene	ND	25	20.6	82	25	21.4	86	4	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD10118-1	Limits
1868-53-7	Dibromofluoromethane	104%	104%	100%	72-122%
17060-07-0	1,2-Dichloroethane-D4	111%	107%	109%	68-124%
2037-26-5	Toluene-D8	99%	100%	98%	80-119%
460-00-4	4-Bromofluorobenzene	100%	102%	102%	72-126%

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD10414

Sampling Dates: 10/04/17 - 10/05/17


Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
Phoenix, AZ 85016
manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com; brooks.dillard@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: 17



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

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Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD10414

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
TD10414-1	10/04/17	09:50	10/10/17	AQ	Ground Water	GW-100417-PG-63
TD10414-2	10/05/17	13:00	10/10/17	AQ	Ground Water	GW-100517-PG-64
TD10414-3	10/05/17	00:00	10/10/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Page 1 of 1

Job Number: TD10414

Account: GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Collected: 10/04/17 thru 10/05/17

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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TD10414-1 GW-100417-PG-63

Chloroform	2.3	1.0		ug/l	SW846 8260C
1,1-Dichloroethylene	2.7	1.0		ug/l	SW846 8260C
cis-1,2-Dichloroethylene	12.4	1.0		ug/l	SW846 8260C
Tetrachloroethylene	3.6	1.0		ug/l	SW846 8260C
Trichloroethylene	62.7	0.50		ug/l	SW846 8260C

TD10414-2 GW-100517-PG-64

Trichloroethylene	3.8	0.50		ug/l	SW846 8260C
-------------------	-----	------	--	------	-------------

TD10414-3 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-100417-PG-63	Date Sampled:	10/04/17
Lab Sample ID:	TD10414-1	Date Received:	10/10/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59443.D	1	10/13/17 05:21	ZQ	n/a	n/a	VZ5444
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	2.3	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	2.7	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	12.4	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	3.6	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	62.7	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	98%		72-122%
17060-07-0	1,2-Dichloroethane-D4	103%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-100517-PG-64	Date Sampled:	10/05/17
Lab Sample ID:	TD10414-2	Date Received:	10/10/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59444.D	1	10/13/17 05:45	ZQ	n/a	n/a	VZ5444
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	3.8	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		72-122%
17060-07-0	1,2-Dichloroethane-D4	107%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	105%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	10/05/17
Lab Sample ID:	TD10414-3	Date Received:	10/10/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z59436.D	1	10/13/17 02:32	ZQ	n/a	n/a	VZ5444
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		72-122%
17060-07-0	1,2-Dichloroethane-D4	96%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



PHOENIX
ACCUTEST

CHAIN OF CUSTODY

PAGE 1 OF 1

10165 Harwin Dr. Ste 150 Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

FED-EX Tracking # 7704 5481 5744		Bottle Order Control #	
SGS Accutest Quote #		SGS Accutest Job # TD10414	
Client / Reporting Information		Project Information	
Company Name GHD		Project Name 012	
Street Address		Street	
City State Zip		City State	
Project Contact M. PLASCHKE		Project # 013932-130	
Phone #		Street Address	
Fax #		City State Zip	
Sampler(s) Name(s) ATRICK GREENE		Client Purchase Order #	
Phone #		City State Zip	
Project Manager		Attention:	
Field ID / Point of Collection		Collection	
Date		Time	
Sampled By		Matrix	
# of bottles		HCl	
NaOH		ZnAcOH	
HNO3		H2SO4	
H3PO4		NONE	
DI Water		MEOH	
TSP		NaMSO4	
ENCORE		OTHER	
Number of preserved Bottles		8260	
Matrix Codes		DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank	
LAB USE ONLY			
TAGGED BY: EC			
VERIFIED BY: H			
Turnaround Time (Business days)			
Standard <input checked="" type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 4 Day RUSH <input type="checkbox"/> 3 Day RUSH <input type="checkbox"/> 2 Day RUSH <input type="checkbox"/> 1 Day EMERGENCY		Approved By (SGS Accutest PM): / Date:	
Emergency & Rush T/A data available VIA Lablink		Data Deliverable Information	
		Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULT1 (Level 3+4) <input type="checkbox"/> REDT1 (Level 3+4) <input type="checkbox"/> Commercial "C"	
		TRRP <input type="checkbox"/> EDD Format <input type="checkbox"/> Other	
		Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By: 10/9/17 1638		Received By: 10/9/17 1638	
Relinquished By: 10/9/17 955		Received By: 10/9/17 955	
Relinquished By: 10/9/17 1645		Received By: 10/9/17 1645	
Relinquished By: 10/9/17 1645		Received By: 10/9/17 1645	
Custody Seal #		Preserved where applicable	
<input type="checkbox"/> Intact <input type="checkbox"/> Not intact		<input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp	

TD10414: Chain of Custody

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COOLER TEMP FORM

TC# TD10414

Delivered by (circle one): ExdEx/UPS ALGC Driver Client

Date: 12/07/17

Client: 64D

Cooler Number: 1

Thermometer ID: 225 CF, °C 2.4 Corrected Temp, °C

SAMPLES CONTAINED IN COOLER

7704 5481 5744

ACCUTEST

1 Date 12/12/17

SGS Accutest Sample Receipt Summary

Page 1 of 2

Job Number: TD10414 Client: GHD Project: OU2
 Date / Time Received: 10/10/2017 9:55:00 AM Delivery Method: Airbill #'s: 770454815744
 No. Coolers: 1 Therm ID: IR-5; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (2.4/2.4);

Cooler Security		Y or N		Y or N	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		Y or N			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation	Y or N	N/A	WTB	STB	
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Sample Integrity - Documentation		Y or N	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		Y or N	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		Y or N	N/A
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD10414: Chain of Custody
 Page 3 of 4

Sample Receipt Log

Page 2 of 2

Job #: TD10414

Date / Time Received: 10/10/2017 9:55:00 AM 9:55:

Initials: ec

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10414-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4
1	TD10414-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR-5	2.4	0	2.4

TD10414: Chain of Custody

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MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD10414

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5444-MB	Z59429.D	1	10/12/17	ZQ	n/a	n/a	VZ5444

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10414-1, TD10414-2, TD10414-3

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	95% 72-122%
17060-07-0	1,2-Dichloroethane-D4	92% 68-124%
2037-26-5	Toluene-D8	99% 80-119%
460-00-4	4-Bromofluorobenzene	101% 72-126%

Blank Spike Summary

Page 1 of 1

Job Number: TD10414

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VZ5444-BS	Z59426.D	1	10/12/17	ZQ	n/a	n/a	VZ5444

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10414-1, TD10414-2, TD10414-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	25	23.1	92	68-119
75-27-4	Bromodichloromethane	25	22.9	92	72-118
67-66-3	Chloroform	25	21.1	84	73-122
75-34-3	1,1-Dichloroethane	25	23.5	94	72-121
75-35-4	1,1-Dichloroethylene	25	22.3	89	67-140
107-06-2	1,2-Dichloroethane	25	22.5	90	68-121
156-59-2	cis-1,2-Dichloroethylene	25	22.3	89	72-117
156-60-5	trans-1,2-Dichloroethylene	25	22.8	91	68-124
74-83-9	Methyl bromide	25	18.2	73	53-138
74-87-3	Methyl chloride	25	18.4	74	50-145
71-55-6	1,1,1-Trichloroethane	25	21.3	85	72-129
127-18-4	Tetrachloroethylene	25	25.9	104	72-132
108-88-3	Toluene	25	24.4	98	73-119
79-01-6	Trichloroethylene	25	25.2	101	73-121
75-69-4	Trichlorofluoromethane	25	18.6	74	46-152
75-01-4	Vinyl chloride	25	19.5	78	54-126
1330-20-7	Xylene (total)	75	73.0	97	74-119
	m,p-Xylene	50	48.8	98	74-119
95-47-6	o-Xylene	25	24.2	97	73-121

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	92%	72-122%
17060-07-0	1,2-Dichloroethane-D4	90%	68-124%
2037-26-5	Toluene-D8	100%	80-119%
460-00-4	4-Bromofluorobenzene	103%	72-126%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: TD10414

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
TD10253-2MS	Z59432.D	500	10/13/17	ZQ	n/a	n/a	VZ5444
TD10253-2MSD	Z59433.D	500	10/13/17	ZQ	n/a	n/a	VZ5444
TD10253-2	Z59430.D	100	10/13/17	ZQ	n/a	n/a	VZ5444
TD10253-2 ^a	Z59431.D	500	10/13/17	ZQ	n/a	n/a	VZ5444

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10414-1, TD10414-2, TD10414-3

CAS No.	Compound	TD10253-2 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	12500	12100	97	12500	12000	96	1	68-119/12
75-27-4	Bromodichloromethane	ND	12500	12200	98	12500	11800	94	3	72-118/16
67-66-3	Chloroform	56.5	12500	11200	89	12500	11300	90	1	73-122/13
75-34-3	1,1-Dichloroethane	ND	12500	12500	100	12500	12800	102	2	72-121/14
75-35-4	1,1-Dichloroethylene	150	12500	12900	102	12500	12700	100	2	67-140/18
107-06-2	1,2-Dichloroethane	ND	12500	11200	90	12500	10900	87	3	68-121/12
156-59-2	cis-1,2-Dichloroethylene	34.7	12500	11600	93	12500	11700	93	1	72-117/13
156-60-5	trans-1,2-Dichloroethylene	ND	12500	12500	100	12500	12600	101	1	68-124/15
74-83-9	Methyl bromide	ND	12500	13600	109	12500	13300	106	2	53-138/16
74-87-3	Methyl chloride	ND	12500	12800	102	12500	12800	102	0	50-145/17
71-55-6	1,1,1-Trichloroethane	ND	12500	11800	94	12500	11900	95	1	72-129/14
127-18-4	Tetrachloroethylene	139	12500	14800	117	12500	14800	117	0	72-132/14
108-88-3	Toluene	55.0	12500	12600	100	12500	12400	99	2	73-119/13
79-01-6	Trichloroethylene	73000 ^c	12500	84300	122* ^b	12500	81600	100	3	73-121/13
75-69-4	Trichlorofluoromethane	ND	12500	13300	106	12500	12900	103	3	46-152/25
75-01-4	Vinyl chloride	ND	12500	13600	109	12500	13600	109	0	54-126/17
1330-20-7	Xylene (total)	ND	37500	38500	103	37500	37900	101	2	74-119/13
	m,p-Xylene	60.0	25000	25800	103	25000	25400	101	2	74-119/13
95-47-6	o-Xylene	ND	12500	12700	102	12500	12500	100	2	73-121/13

CAS No.	Surrogate Recoveries	MS	MSD	TD10253-2	TD10253-2	Limits
1868-53-7	Dibromofluoromethane	92%	96%	96%	98%	72-122%
17060-07-0	1,2-Dichloroethane-D4	89%	87%	94%	94%	68-124%
2037-26-5	Toluene-D8	97%	99%	100%	100%	80-119%
460-00-4	4-Bromofluorobenzene	106%	107%	104%	104%	72-126%

(a) AZ:D2

(b) Outside control limits due to high level in sample relative to spike amount.

(c) Result is from Run #2.

* = Outside of Control Limits.

Technical Report for

GHD Services Inc.

52nd Street Superfund Site - OU2 Area, Phoenix, AZ

013932

SGS Accutest Job Number: TD10749

Sampling Date: 10/16/17


Report to:

GHD Services Inc.
4747 N. 22nd Street Second Floor
Phoenix, AZ 85016
manfred.plaschke@ghd.com; mary.cameron@ghd.com;
sheri.finn@ghd.com; brooks.dillard@ghd.com
ATTN: Manfred Plaschke

Total number of pages in report: 17



Test results contained within this data package meet the requirements
of the National Environmental Laboratory Accreditation Program
and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Anita Patel 713-271-4700

Certifications: TX (T104704220-17-27) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2017-002) VA (8999)

This report shall not be reproduced, except in its entirety, without the written approval of SGS Accutest.
Test results relate only to samples analyzed.

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Sample Summary

GHD Services Inc.

Job No: TD10749

52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Project No: 013932

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
TD10749-1	10/16/17	09:00	10/17/17	AQ	Ground Water	GW-101617-PG-65
TD10749-2	10/16/17	12:40	10/17/17	AQ	Ground Water	GW-101617-PG-66
TD10749-3	10/16/17	00:00	10/17/17	AQ	Trip Blank Water	TRIP BLANK

Summary of Hits

Job Number: TD10749
Account: GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ
Collected: 10/16/17

Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
---------------	------------------	--------------------	----	-----	-------	--------

TD10749-1 GW-101617-PG-65

No hits reported in this sample.

TD10749-2 GW-101617-PG-66

No hits reported in this sample.

TD10749-3 TRIP BLANK

No hits reported in this sample.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GW-101617-PG-65	Date Sampled:	10/16/17
Lab Sample ID:	TD10749-1	Date Received:	10/17/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K357561.D	1	10/18/17 14:59	EM	n/a	n/a	VK2131
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	99%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	GW-101617-PG-66	Date Sampled:	10/16/17
Lab Sample ID:	TD10749-2	Date Received:	10/17/17
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K357562.D	1	10/18/17 15:23	EM	n/a	n/a	VK2131
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		72-122%
17060-07-0	1,2-Dichloroethane-D4	114%		68-124%
2037-26-5	Toluene-D8	99%		80-119%
460-00-4	4-Bromofluorobenzene	98%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK	Date Sampled:	10/16/17
Lab Sample ID:	TD10749-3	Date Received:	10/17/17
Matrix:	AQ - Trip Blank Water	Percent Solids:	n/a
Method:	SW846 8260C		
Project:	52nd Street Superfund Site - OU2 Area, Phoenix, AZ		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	K357560.D	1	10/18/17 14:34	EM	n/a	n/a	VK2131
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	ug/l	
74-83-9	Methyl bromide	ND	2.0	ug/l	
74-87-3	Methyl chloride	ND	2.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	4.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		72-122%
17060-07-0	1,2-Dichloroethane-D4	115%		68-124%
2037-26-5	Toluene-D8	100%		80-119%
460-00-4	4-Bromofluorobenzene	100%		72-126%

ND = Not detected
 RL = Reporting Limit
 E = Indicates value exceeds calibration range

J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Arizona Qualifiers
- Chain of Custody

Arizona Qualifiers

Job Number: TD10749
Account: CRAAZP GHD Services Inc.
Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

The following Arizona qualifiers have been applied to data and/or QC in this report.

Qual	Description
------	-------------

Q9 Insufficient sample received to meet method QC requirements.

4.1
4



ACCUTEST

COOLER TEMP FORM

TC#

1710749

Delivered by (circle one):

FedEx/UPS

ALGC Driver

Client

Date:

10/17/17

Client:

GTH

Cooler Number:

1

Thermometer ID:

JAG

CF, °C

6

Corrected Temp, °C

6.9

SAMPLES CONTAINED IN COOLER

ORIGIN ID MSC
ASHEVILLE
ACCUTEST
1741 W. UNIV. BLVD.
SUITE 400
ROSELLE, GA 30082
UNITED STATES

TO SAMPLE RE:

ACCUTEST I

10165 HARW.

SUITE 150

HOUSTON T

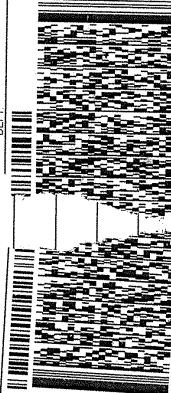
(713) 271-4700

FAX

EO

DEPT

GHD

FedEx
Express

TUE - 17 OCT 10:30A

PRIORITY OVERNIGHT

DSR

77071

TX-US

IAH

AB SGRA



ACCUTEST

Initiality Date 10/17/17

Custody Seal

SGS

Form: SM027-06 Rev 10/24/2016

TD10749: Chain of Custody

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SGS

12 of 17
ACCUTEST
TD107494.2
4

SGS Accutest Sample Receipt Summary

Page 1 of 2

Job Number: TD10749 Client: GHD Project: 042
 Date / Time Received: Delivery Method: Airbill #'s: 770511138676
 No. Coolers: 1 Therm ID: IR9; Temp Adjustment Factor: 0;
 Cooler Temps (Initial/Adjusted): #1: (0.9/0.9);

Cooler Security		<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. SmpI Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature		<u>Y or N</u>			
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
2. Cooler temp verification:					
3. Cooler media:	Ice (Bag)				
Quality Control Preservation		<u>Y or N</u>	<u>N/A</u>	<u>WTB</u>	<u>STB</u>
1. Trip Blank present / cooler:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
4. VOCs headspace free:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Sample Integrity - Documentation		<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sample Integrity - Condition		<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3. Condition of sample:	Intact		
Sample Integrity - Instructions		<u>Y or N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comments

TD10749: Chain of Custody
 Page 3 of 4

Sample Receipt Log

Page 2 of 2

Job #: TD10749

Date / Time Received: 10/17/2017 9:30:00 AM

Initials: BG

Client: GHD

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TD10749-1	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-1	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-1	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-2	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-2	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-2	40ml	3	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-3	40ml	1	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9
1	TD10749-3	40ml	2	VR	HCL	Note #1 - Preservative to be checked by analyst at the instrument.	IR9	0.9	0	0.9

4.2
4

TD10749: Chain of Custody

Page 4 of 4

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Page 1 of 1

Job Number: TD10749

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2131-MB	K357552.D	1	10/18/17	EM	n/a	n/a	VK2131

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10749-1, TD10749-2, TD10749-3

CAS No.	Compound	Result	RL	Units	Q
71-43-2	Benzene	ND	0.50	ug/l	
75-27-4	Bromodichloromethane	ND	0.50	ug/l	
67-66-3	Chloroform	ND	0.50	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	ug/l	
74-83-9	Methyl bromide	ND	0.50	ug/l	
74-87-3	Methyl chloride	ND	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	ug/l	
108-88-3	Toluene	ND	0.50	ug/l	
79-01-6	Trichloroethylene	ND	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.5	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	100% 72-122%
17060-07-0	1,2-Dichloroethane-D4	112% 68-124%
2037-26-5	Toluene-D8	99% 80-119%
460-00-4	4-Bromofluorobenzene	98% 72-126%

Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: TD10749

Account: CRAAZP GHD Services Inc.

Project: 52nd Street Superfund Site - OU2 Area, Phoenix, AZ

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK2131-BS	K357549.D	1	10/18/17	EM	n/a	n/a	VK2131
VK2131-BSD ^a	K357550.D	1	10/18/17	EM	n/a	n/a	VK2131

The QC reported here applies to the following samples:

Method: SW846 8260C

TD10749-1, TD10749-2, TD10749-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	25	23.0	92	23.8	95	3	68-119/30
75-27-4	Bromodichloromethane	25	25.1	100	25.7	103	2	72-118/30
67-66-3	Chloroform	25	24.3	97	25.1	100	3	73-122/30
75-34-3	1,1-Dichloroethane	25	25.9	104	26.7	107	3	72-121/30
75-35-4	1,1-Dichloroethylene	25	25.8	103	26.7	107	3	67-140/30
107-06-2	1,2-Dichloroethane	25	25.0	100	25.6	102	2	68-121/30
156-59-2	cis-1,2-Dichloroethylene	25	22.9	92	24.2	97	6	72-117/30
156-60-5	trans-1,2-Dichloroethylene	25	25.8	103	26.5	106	3	68-124/30
74-83-9	Methyl bromide	25	22.9	92	22.6	90	1	53-138/30
74-87-3	Methyl chloride	25	23.3	93	24.7	99	6	50-145/30
71-55-6	1,1,1-Trichloroethane	25	28.3	113	28.8	115	2	72-129/30
127-18-4	Tetrachloroethylene	25	24.8	99	26.5	106	7	72-132/30
108-88-3	Toluene	25	23.2	93	24.6	98	6	73-119/30
79-01-6	Trichloroethylene	25	24.5	98	25.2	101	3	73-121/30
75-69-4	Trichlorofluoromethane	25	30.5	122	30.5	122	0	46-152/30
75-01-4	Vinyl chloride	25	21.6	86	22.1	88	2	54-126/30
1330-20-7	Xylene (total)	75	72.2	96	74.9	100	4	74-119/30
	m,p-Xylene	50	48.7	97	50.3	101	3	74-119/30
95-47-6	o-Xylene	25	23.5	94	24.5	98	4	73-121/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	103%	101%	72-122%
17060-07-0	1,2-Dichloroethane-D4	109%	106%	68-124%
2037-26-5	Toluene-D8	98%	99%	80-119%
460-00-4	4-Bromofluorobenzene	101%	101%	72-126%

(a) AZ:Q9

* = Outside of Control Limits.

WATER LEVEL RECORDS

PROJECT NAME: 52nd Street OU2

LOCATION: Phoenix, Arizona

JOB NO.: 13932-130

DATE: 9/2/17

CLIENT: The Companies

Technician: Patrick Greene /

OBSERVATION WELL	DEPTH TO WATER A		PREVIOUS DEPTH TO WATER B		COMMENTS
	feet	date/time	feet	date/time	
AS02	DRY	9/5 0940	DRY	6/1/17	
CRA01	103.95	9/5 1640	103.45	6/1/17	
DM515-210	99.09	9/5 1500	99.85	6/1/17	
EW06	104.20	9/5 1315	104.25	6/1/17	
EW07	107.41	9/5 1630	107.15	6/1/17	Transducer
EW19-D	95.05	9/2 0840	94.00	6/1/17	
EW19-S	DRY	9/2 0845	Dry	6/1/17	
EW21	DRY	9/2 0830	Dry	6/1/17	
EW22-D	98.81	9/2 0700	97.35	6/1/17	
EW22-S	105.90	9/2 0716	105.05	6/1/17	
EWM	130.10	9/2 1520	128.30	6/1/17	
EWN	163.20	9/5 1730	138.70	6/1/17	
EWS	139.01	9/5 1700	138.75	6/1/17	
EWSP21	104.70	9/2 1515	104.20	6/1/17	
NW01	94.10	9/2 1500	94.35	6/1/17	
NW02	107.81	9/5 1505	107.20	6/1/17	Transducer
NW03	103.30	9/5 1515	102.83	6/1/17	
NW04-D	106.30	9/5 1550	104.22	6/1/17	
NW04-S	104.03	9/5 1600	105.15	6/1/17	Transducer
NW05-S	105.25	9/5 1620	104.63	6/1/17	
NW06-D	103.63	9/5 0730	102.75	6/1/17	
NW06-S	103.55	9/5 0735	102.55	6/1/17	
NW07-D	100.80	9/5 1330	101.25	6/1/17	} 2x
NW07-M	96.50	9/5 1335	101.45	6/1/17	
NW07-S	102.25	9/5 1345	102.05	6/1/17	
NW08-D	100.80	9/5 0810	101.90	6/1/17	} ? 2x check
NW08-M	102.01	9/5 0815	103.50	6/1/17	
NW08-S	103.20	9/5 0820	102.82	6/1/17	
NW09-D	105.51	9/5 1100	105.80	6/1/17	
NW09-D2	105.35	9/5 1105	105.45	6/1/17	
NW09-M	105.15	9/5 1110	104.50	6/1/17	Transducer
NW10-D	104.35	9/5 0930	104.85	6/1/17	
NW11-D	103.90	9/5 1305	104.00	6/1/17	
NW11-M	103.70	9/5 1310	103.80	6/1/17	Transducer
NW12-D	96.50	9/5 1740	93.65	6/1/17	CAR
NW13-D	103.86	9/5 0905	104.03	6/1/17	
NW13-M	103.95	9/5 0910	104.15	6/1/17	
NW14-D	103.16	9/5 0840	103.12	6/1/17	
NW14-M	103.20	9/5 0850	103.20	6/1/17	

Comments

WATER LEVEL RECORDS

PROJECT NAME: 52nd Street OU2

JOB NO: 13932-130

CLIENT: The Companies

DATE:

Technician

Phoenix, Arizona

9/2/17

Patrick Greene /

Kyle Weber

OBSERVATION WELL	DEPTH TO WATER			PREVIOUS DEPTH TO		COMMENTS
				WATER		
	A			B		
	feet	date/time		feet		
NW15-S	102.10	9/5	1500	102.60	6/1/17	
NW16-D	103.85	9/5	1400	103.70	6/1/17	
NW16-M	104.60	9/5	1410	104.50	6/1/17	
NW17-S	104.30	9/5	1525	103.65	6/1/17	
NW18-M	103.00	9/5	1535	102.45	6/1/17	
NW18-S	102.90	9/5	1540	102.35	6/1/17	
NW19-D	103.91	9/2	1230	104.48	6/1/17	
NW19-M	103.95	9/2	1235	104.55	6/1/17	
NW21-S	106.20	9/2	1010	96.70	6/1/17	
NW22-D	102.81	9/2	0945	102.40	6/1/17	
NW22-S	102.40	9/2	0940	102.20	6/1/17	
NW23-D	102.75	9/2	10545	103.40	6/1/17	
NW23-S	101.50	9/2	1040	102.20	6/1/17	
NW24-D	78.26	9/2	1110	79.60	6/1/17	
NW24-S	78.35	9/2	1115	79.70	6/1/17	
NW25-S	84.92	9/2	1135	86.40	6/1/17	
OU312-D	97.51	9/2	0855	96.75	6/1/17	
OU312-M	101.79	9/2	0900	101.15	6/1/17	
OU313-D	103.67	9/2	0820	102.90	6/1/17	
OU313-M	106.15	9/2	0825	105.35	6/1/17	
OU314-D	97.31	9/2	0910	96.50	6/1/17	
OU314-M	105.95	9/2	0815	105.02	6/1/17	
OU320-M	105.48	9/5	1030	105.90	6/1/17	
OU320-S	105.40	9/5	1035	105.80	6/1/17	
PHXA-06	102.50	9/5	1450	102.98	6/1/17	
PZ01-D	108.80	9/5	1715	108.20	6/1/17	
PZ01-S	108.77	9/5	1720	108.18	6/1/17	
PZ02-D	114.25	9/5	1730	113.52	6/1/17	
PZ02-S	114.27	9/5	1735	113.55	6/1/17	
TEW01	109.70	9/5	1725	109.02	6/1/17	
BC-16	74.50	9/2	1025	75.70	6/1/17	
EW-03	75.10	9/2	1030	76.40	6/1/17	
DM-509	74.97	9/2	1040	76.20	6/1/17	
PZ01-A	024	9/2	1200	Dry	6/1/17	
PZ01-B	75.10	9/2	1205	76.35	6/1/17	

Comments

20-7 106.15
312?

96.20

Location _____

Date _____

Project / Client _____

SEPTEMBER

2017

WELL

REHAB

WELL ID	INITIAL DTW (9/5)	PRE-REHAB DTW	POST REHAB DTW (10/6/17)
NW12-D	96.50	200.02	97.25
NW07-M	96.50	102.30	102.41
NW04-S	104.03	105.85	105.90
NW03	103.30	103.35	103.35
NW08-S	103.20	102.30	103.24
NW08-D	100.80	102.00	102.85
NW08-M	102.01	101.60	103.97

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/6/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-090617-PG-01 GW-090617-PG-02
 SAMPLE TIME: 1110 1330
 (RB)

WELL INFORMATION

WELL NUMBER: NW04-D
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1099.92 ft.
 STATIC WATER DEPTH: 106.36 ELEVATION:
 BOTTOM DEPTH: 204 ft. ELEVATION:
 WATER COLUMN LENGTH: 97.7
 SCREENED INTERVAL: 183-203 ft.
 WELL VOLUME: 63.89 (3) = 191.68/5 FLOW ≈ 2 GPM

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us) 38
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	40	80	120	160	200	
	7.03	7.05	6.98	7.07	6.65	
°F	84.0	81.3	81.7	81.3	81.5	
	3309	3304	3323	3434	3698	
	CLEAR	Clear	Clear			
	CLEAR	Clear	Clear			
	NONE	None	None			

WL DROPPING.

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT No.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/7/17
DEVELOPMENT CREW MEMBERS: PG, DH
PURGING METHOD: 3" Submersible
SAMPLE NO.: 6W-090717-26-03
SAMPLE TIME: 1255

WELL INFORMATION

WELL NUMBER: NW09-M
WELL TYPE (diameter/material): 4" / steel
MEASURING POINT ELEVATION: 1099.42 ft.
STATIC WATER DEPTH: 105.20 **ELEVATION:** _____
BOTTOM DEPTH: 190.5 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 85.3
SCREENED INTERVAL: 170-190ft.
WELL VOLUME: 55.78 (3) = 167.35/5
= 33.47

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	35	70	105	140	175	
	7.55	7.26	7.29	7.33	7.33	
°F	82.8	83.8	83.4	82.9	83.4	
	1441	1495	1495	1487	1475	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/8/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-090817-PG-04, GW-090817-PG-05
 SAMPLE TIME: 0755 0800 (DUP)

WELL INFORMATION

WELL NUMBER: NW02
 WELL TYPE (diameter/material): 4" / pvc
 MEASURING POINT ELEVATION: 1101.83 ft.
 STATIC WATER DEPTH: 107.85 ELEVATION:
 BOTTOM DEPTH: 193 ft. ELEVATION:
 WATER COLUMN LENGTH: 85.15 FLOW
 SCREENED INTERVAL: 173-193 ft. GPM ~ 3
 WELL VOLUME: 55.688 (3) = 167.06 / 5 = 33.41

Note: For 4-inch diameter well:

1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	34	68	102	136	170	
	7.33	7.28	7.26	7.27	7.22	
°F	77.6	77.9	77.9	78.1	78.6	
	2024	2072	2081	2080	2088	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/8/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-090817-PG-06, GW-090817-PG-07
 SAMPLE TIME: L→ 1300 L→ 1320
 (FIELD BLANK)

WELL INFORMATION

WELL NUMBER: CRA-01
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1106.4 ft.
 STATIC WATER DEPTH: 105.40 ELEVATION: _____
 BOTTOM DEPTH: 126 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 21.00
 SCREENED INTERVAL: 105.5-125.5 ft.
 WELL VOLUME: 13.73 (3) = 41.202

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
	7.69	7.36	7.25	7.26	7.23	
°F	81.5	80.3	80.4	80.4	81.7	
	1797	2009	2033	2042	2025	
	CLEAR	—	—	—	—	
	CLEAR	—	—	—	—	
	NONE	—	—	—	—	

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2
 DATE OF WELL DEVELOPMENT: 9/8/17
 DEVELOPMENT CREW MEMBERS: PG, OH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091117-PG-10
 SAMPLE TIME: 1156
 (BAILER)

PROJECT NO.: 013932-130

WELL INFORMATION

WELL NUMBER: NW04-S
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1099.96ft.
 STATIC WATER DEPTH: 104.05
 BOTTOM DEPTH: 130.5
 WATER COLUMN LENGTH: 26
 SCREENED INTERVAL: 90-130
 WELL VOLUME: 17.004 (3) = 51.01 / 5

ELEVATION:

ELEVATION:

FLOW

0.5 GPM

Note: For 4-inch diameter well:

1 foot = 0.66 gallons (us)
 1 meter = 2 liters

10.2

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
of	8.21	8.35	7.31			
	82.2	83.0	82.3			
	1771	1765	1900			
	CLEAR	—				
	CLEAR	—				
	NONE	—				

WELL DRY @ 20 GAL

RECHARGE .05' EVERY 2.5 MIN

1' PER 0.50 MIN

9/14/17 @ 1125 OTW: 105.90 . WELL RECOVERED > 80%

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/8/17 + 9/11
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091117-PG-11
 SAMPLE TIME: 1330

WELL INFORMATION

WELL NUMBER: NW07-S
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1094.19 ft.
 STATIC WATER DEPTH: 102.27 ELEVATION: _____
 BOTTOM DEPTH: 131 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 28.73
 SCREENED INTERVAL: 90-130 ft.
 WELL VOLUME: 18.78 (3) = 56.37 / 5

FLOW 1.0 GPM

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

= 11.27

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	11	22	33	44	55	
	7.19	7.13				
of	83.9	85.8				
	1270	1238				
	CLEAR	—				
	CLEAR	—				
	NONE	—				

DRY @ 25 gal

1' EVERY 0:20 MIN

9/11/17 @ 1315 = 102.2 WELL > 80% RECOVERED

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/11/17
DEVELOPMENT CREW MEMBERS: PG, DH
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-091117-PG-08
SAMPLE TIME: L 0925

WELL INFORMATION

WELL NUMBER: NW09-D2
WELL TYPE (diameter/material): 4" / steel
MEASURING POINT ELEVATION: 1099.30 ft.
STATIC WATER DEPTH: 105.45 **ELEVATION:** _____
BOTTOM DEPTH: 260.5 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 155.05
SCREENED INTERVAL: 240-260 ft.
WELL VOLUME: 101.40 (3) = 304.208 / 5 Flow ≈ 3 GPM

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

= 60.84

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	60	120	180	240	300	
	7.35	7.31	7.29	7.35	7.30	
°F	79.4	79.8	80.3	81.6	80.4	
	1458	1382	1362	1390	1380	
	CLEAR					
	CLEAR					
	NONE					

WL ↓

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130

DATE OF WELL DEVELOPMENT: 9/7/17 + 9/11/17

DEVELOPMENT CREW MEMBERS: PG, DH

PURGING METHOD: 3" Submersible

SAMPLE NO.: 3" GRAB FOS

SAMPLE TIME: GW-091117-PG-09

L > 1045 (GRAB)

WELL INFORMATION

WELL NUMBER: NW08-D

WELL TYPE (diameter/material): 4" / steel

MEASURING POINT ELEVATION: 1098.72.

STATIC WATER DEPTH: 100.80 ELEVATION: _____

BOTTOM DEPTH: 244 ELEVATION: _____

WATER COLUMN LENGTH: 143.2

SCREENED INTERVAL: 224-244

WELL VOLUME: 93.65 (3) = 280.95/5 = 56.19

FLOW ≈ 2.5 GPM

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
1 meter = 2 liters

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
			50			
Gal	55	110	165	220	275	
	8.27	8.56	7.32			
°F	80.4	80.1	82.7			
	2058	2039	2446			
	SL. CLOUDY	CLEAR	Clear			
	GRAY	CLEAR	—			
	NONE	—	—			

DRY @ 110 GAL

RECOVERING 1' PER 60 MIN

9/11/17 @ 1015 → DTW: 102.00

Pumped 50 GAL on 9-11-17

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/11/17 + 9/13/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: ~~GW-091317-PG-16~~ GW-091317-PG-16
 SAMPLE TIME: 0710

WELL INFORMATION

WELL NUMBER: NW07-M
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1093.94 ft.
 STATIC WATER DEPTH: 96.55 ELEVATION: _____
 BOTTOM DEPTH: 200.5 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 103.95
 SCREENED INTERVAL: 180-200ft.
 WELL VOLUME: 67.98 (3) = 203.94 / 5 Flow GPM ≈ 3

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
		PUMP SO WELL	GAL AFTER RECOVERY			
Gal	40	80	120	+60	200	
	9.02	7.40				
°F	85.9	80.7				
	1183	1448				
	CLEAR					
	CLEAR					
	NONE					

NOTES:

9/13/17 @ 0645 WELL DRY @ 75 GAL
 DTH: 102.15 WELL > 80% RECOVERED.
 GRAB SAMPLE

PROJECT NAME:	52 nd Street OU2	PROJECT NO.:	013932-130
DATE OF WELL DEVELOPMENT:	9/12/17		
DEVELOPMENT CREW MEMBERS:	PG, M. HIGAN		
PURGING METHOD:	3" Submersible		
SAMPLE NO.:	Gw - 091217 - PG - 12		
SAMPLE TIME:	L> 0810		

WELL NUMBER:	NW05-S
WELL TYPE (diameter/material)	4" / steel
MEASURING POINT ELEVATION:	1099.98ft.
STATIC WATER DEPTH:	105.32
BOTTOM DEPTH:	128.5
WATER COLUMN LENGTH:	23.18 (654)
SCREENED INTERVAL:	88-128
WELL VOLUME:	15.159 (3) = 45.47

ELEVATION:

FLOW \approx 1 GPM

CHANGE TO
0.5 GPM @

35 GALLONS

1 foot = 0.66 gallons (us)
1 meter = 2 liters

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
	8.07	7.33	7.03	6.82	6.76	
OF	61.4	80.9	81.5	82.2	81.3	
	2003	2109	2309	2326	2281	
	SL. CLOUDY					
	ORANGE- W					
	REDF					

SULFUR

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/12/17
DEVELOPMENT CREW MEMBERS: PG, MH
PURGING METHOD: 3" Submersible
SAMPLE NO.: 6W-091217-PG-13
SAMPLE TIME: L 1145

WELL INFORMATION

WELL NUMBER: NW07-D
WELL TYPE (diameter/material): 4" / steel
MEASURING POINT ELEVATION: 1094.21ft.
STATIC WATER DEPTH: 100.91 **ELEVATION:** _____
BOTTOM DEPTH: 236 **ELEVATION:** _____
WATER COLUMN LENGTH: 135.09 (.654)
SCREENED INTERVAL: 215-235
WELL VOLUME: 88.349 (3) = 265.047/5
= 53.009

Flow = 25 gpm

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	54	108	162	216	270	
	8.20	7.67	7.46	7.51	7.45	
^{of}	81.5	80.4	80.6	81.0	80.6	
	1387	1410	1423	1443	1419	
SL. CLOUDY	→			CLEAR		
SL. GREY			GA			
SEWAGE						

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME:	52 nd Street OU2	PROJECT NO.:	013932-130
DATE OF WELL DEVELOPMENT:	09/12/17		
DEVELOPMENT CREW MEMBERS:	MH, PG		
PURGING METHOD:	3" Submersible		
SAMPLE NO.:	GW-091217-PG-14	GW-091217-PG-15	
SAMPLE TIME:	↳ 1440	↳ 1445 (DUP)	

WELL INFORMATION

WELL NUMBER:	NW19-M	
WELL TYPE (diameter/material)	4" / steel	
MEASURING POINT ELEVATION:	1100.69 ft.	
STATIC WATER DEPTH:	104.01	ELEVATION: _____
BOTTOM DEPTH:	185.5 ft.	ELEVATION: _____
WATER COLUMN LENGTH:	$81.49 (.654) = 53.29$	
SCREENED INTERVAL:	165-185 ft.	Flow = 2.5 gpm
WELL VOLUME:	$53.29 (3) = 159.883 / 5$ $= 31.977$	

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
1 meter = 2 liters

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	32	64	96	128	160	
	7.30	7.34	7.33	7.33	7.36	
OF	84.6	824 824	82.3	86.3	81.5	
	1424	1425	1422	1422	1426	
CLEAR						
SL Yellow						
NONE						

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT No.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/13/17
 DEVELOPMENT CREW MEMBERS: PG, MH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091317-PG-17
 SAMPLE TIME: L > 1045

WELL INFORMATION

WELL NUMBER: NW09-D
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1099.58
 STATIC WATER DEPTH: 105.56 ELEVATION: _____
 BOTTOM DEPTH: 230 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 124.44 (654) = 81384
 SCREENED INTERVAL: 210-230 ft.
 WELL VOLUME: 81.384 (3) = 244.151 / 5
= 48.830

Flow = 3gpm

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	50	100	150	200	250	
	8.26	7.93	7.79	7.56	7.57	
of	82.0	81.9	82.3	82.7	82.5	
	1288	1343	1356	1412	1376	
CLEAR						
SL. YELLOW						
SWEET						

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT No.:** 013932-130
DATE OF WELL DEVELOPMENT: _____
DEVELOPMENT CREW MEMBERS: _____
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-091317-PG-18 , GW-091317-PG-19
SAMPLE TIME: ↳ 1200 ^{PM} (BLANK) ↳ 1330

WELL INFORMATION

WELL NUMBER: NW21-S
WELL TYPE (diameter/material): 4" /PVC
MEASURING POINT ELEVATION: 1108.6
STATIC WATER DEPTH: 96.29 **ELEVATION:** _____
BOTTOM DEPTH: 106 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 9.71 (.654) = 6.35
SCREENED INTERVAL: 91-106
WELL VOLUME: 6.35 (3) = 19.651 / 5
= 3.81

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	4	8	12	16	20	
	7.59	7.45	7.53	7.00 7.00	7.69 7.69	
°F	99.3	102.2	98.4	92.7	85.3	
	1689	1694	1694	2221	2232	
CLEAR						
CLEAR						
NONE						

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT No.:** 013932-130

DATE OF WELL DEVELOPMENT: 9/14/17

DEVELOPMENT CREW MEMBERS: PG DH

PURGING METHOD: 3" Submersible

SAMPLE NO.: GW-061417-PG-20, GW-061417-PG-21

SAMPLE TIME: $\rightarrow (0640)$ $\rightarrow 0815$

WELL INFORMATION

WELL NUMBER: NW 3-D

WELL TYPE (diameter/material) 4" / steel

MEASURING POINT ELEVATION: 1104.10 ft.

STATIC WATER DEPTH: 104.40

BOTTOM DEPTH: 230.5 ft.

WATER COLUMN LENGTH: 126.10

SCREENED INTERVAL: 210-230 ft.

WELL VOLUME: $82.46 (3) = 247.4 / 5$

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)

1 meter = 2 liters

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	50	100	150	200	250	
	7.54	7.51	7.37	7.32	7.30	
oF	78.8	78.8	78.9	79.0	78.6	
	1281	1231	1260	1266	1273	
	_____	_____	_____	_____	_____	
	_____	_____	_____	_____	_____	
	_____	_____	_____	_____	_____	
	CLEAR	_____	_____	_____	_____	
	CLEAR	_____	_____	_____	_____	
	NONE	_____	_____	_____	_____	

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/14/17
 DEVELOPMENT CREW MEMBERS: PG, PH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091417-PG-22
 SAMPLE TIME: ↳ 1000

WELL INFORMATION

WELL NUMBER: NW23-S
 WELL TYPE (diameter/material): 4" /PVC
 MEASURING POINT ELEVATION: 1103.10
 STATIC WATER DEPTH: 101.55 ELEVATION: _____
 BOTTOM DEPTH: 130 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 28.45
 SCREENED INTERVAL: 95-130
 WELL VOLUME: 18.60 (3) = 55.81 / 5 = 11.16 FLOW \approx 1.5 GPM

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	12	24	36	48	60	
	7.02	6.92	6.97	6.97	6.98	
°F	83.9	83.1	82.8	82.1	81.5	
	1504	1511	1505	1501	1511	
	clean					
	clean					
	None					

NOTES:

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT No.: 013932-130

DATE OF WELL DEVELOPMENT: 9/14/17

DEVELOPMENT CREW MEMBERS: PG, DH

PURGING METHOD: 3" Submersible

SAMPLE NO.: GW-091417-PG-23

SAMPLE TIME: ↳ 11/20

WELL INFORMATION

WELL NUMBER: NW01

WELL TYPE (diameter/material): 4" / pvc

MEASURING POINT ELEVATION: 1112.22 ft.

STATIC WATER DEPTH: 94.10 ELEVATION: _____

BOTTOM DEPTH: 110 ft. ELEVATION: _____

WATER COLUMN LENGTH: 15.9

SCREENED INTERVAL: 90-110 ft.

WELL VOLUME: 10.39 (3) = 31.19 / 5

Note: For 4-inch diameter well:

1 foot = 0.66 gallons (us)
1 meter = 2 liters

6.2

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	8	16	24	32	40	
	7.04	7.07	7.12	7.12	7.13	
°F	81.6	79.9	79.3	78.6	78.5	
	2209	2241	2235	2236	2238	
	Cloudy				Clear	
	Orange					
	None					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/14/17
DEVELOPMENT CREW MEMBERS: PG, DH
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-091417-PG-24 GW-091417-PG-25
SAMPLE TIME: L → 1240 L → 1245

WELL INFORMATION

WELL NUMBER: NW25-S
WELL TYPE (diameter/material): 4" /PVC
MEASURING POINT ELEVATION: 1130.33
STATIC WATER DEPTH: 84.85 **ELEVATION:** _____
BOTTOM DEPTH: 115 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 30.15
SCREENED INTERVAL: _____
WELL VOLUME: 19.71 (3) = 69.15 / 5

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
1 meter = 2 liters

= 11.83

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	12	24	36	48	60	
	7.34	7.36	7.28	7.30	7.35	
of	81.2	80.4	80.1	80.2	79.9	
	2088	2004	2071	2065	2101	
	SL. CLOUDY		CLEAR			
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2

PROJECT No.: 013932-130

DATE OF WELL DEVELOPMENT: 9/15/17

DEVELOPMENT CREW MEMBERS: PG, DH

PURGING METHOD: 3" Submersible

SAMPLE NO.: GW-091517-PG-26

SAMPLE TIME: L→ 0745

WELL INFORMATION

WELL NUMBER: NW11-M

WELL TYPE (diameter/material) 4" / steel

MEASURING POINT ELEVATION: 1097.59 ft.

STATIC WATER DEPTH: 103.79

ELEVATION:

BOTTOM DEPTH: 193.5 ft.

ELEVATION:

WATER COLUMN LENGTH: 89.71

SCREENED INTERVAL: 173-193 ft.

WELL VOLUME: $58.67(3) = 176.01/5$

FLOW \approx 3 GPM

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)

1 meter = 2 liters

352

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	36	72	108	144	180	
	9.50	8.60	8.30	8.24	8.32	
OF	78.2	78.9	79.1	79.2	79.5	
	1263	1427	1490	1521	1473	
	CLEAR	—				
	CLEAR	—				
	NONE	—				

NOTES: WL ↓

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/18/17
DEVELOPMENT CREW MEMBERS: PG, DH
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-091817-PG-27 GW-091817-PG-28
SAMPLE TIME: → 0730 → 0810
(FIELD BLANK)

WELL INFORMATION

WELL NUMBER: NW23-D
WELL TYPE (diameter/material): 4" /PVC
MEASURING POINT ELEVATION: 1103.23
STATIC WATER DEPTH: 102.85 **ELEVATION:** _____
BOTTOM DEPTH: 217 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 114.15
SCREENED INTERVAL: 177-217 **FLOW \approx 3 GPM**
WELL VOLUME: 74.65 (3) = 223.96 / 5
= 44.79

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	45	90	135	180	225	
	7.38	7.19	7.32	7.28	7.30	
^{of}	77.8	78.8	78.1	78.8	78.8	
	1503	1510	1510	1536	1510	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2
 DATE OF WELL DEVELOPMENT: 9/14/17 + 9/18/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: BW-091817-PG-29
 SAMPLE TIME: L 1000

PROJECT No.: 013932-130

WELL INFORMATION

WELL NUMBER: NW08-S
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1098.45ft.
 STATIC WATER DEPTH: 103.20
 BOTTOM DEPTH: 150.5
 WATER COLUMN LENGTH: 47.30
 SCREENED INTERVAL: 100-150
 WELL VOLUME: $30.93 (3) = 92.80 / 5$

ELEVATION: _____

ELEVATION: _____

FLOW \approx 2 GPM

Note: For 4-inch diameter well:

1 foot = 0.66 gallons (us)

1 meter = 2 liters

18.56

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
			(BAILER)			
Gal	18	36	54	72	90	
	8.93	8.80	7.64			
of	83.6	82.8	79.4			
	1322	1118	1708			
	Clear					

DATA @ 40 GPM

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/18/17
 DEVELOPMENT CREW MEMBERS: PG DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: ~~4/19/17~~ 09 - 091917-PG - 31
 SAMPLE TIME: L 0950

WELL INFORMATION

WELL NUMBER: NW11-D
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1097.69 ft.
 STATIC WATER DEPTH: 104.00 ELEVATION: _____
 BOTTOM DEPTH: 230.5 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 126.50
 SCREENED INTERVAL: 210-230 ft.
 WELL VOLUME: 82.73 (3) = 248.19 / 5

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

49.63

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
			AFTER RECOVERY PURGE	50 GAL		
Gal	50	100	150	200	250	
	8.04	7.83	7.64			
OF	78.3	80.6	80.6			
	1263	1320	1209			
CLARITY:	CLOUDY	CLEAR	1	clear		
COLOR:	BLACK	CLEAR	1	clear		
ODOR:	15#	NONE	1	None		

NOTES:

WELL DRY @ 120 GAL
 9/19 0930 DTW: 104.05 WELL > 80% RECOVERED

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/19/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091917-PG-30
 SAMPLE TIME: 120815
 (MS/MSP)

WELL INFORMATION

WELL NUMBER: NW22-D
 WELL TYPE (diameter/material): 4" /PVC
 MEASURING POINT ELEVATION: 1101.33
 STATIC WATER DEPTH: 102.90 ELEVATION: _____
 BOTTOM DEPTH: 195 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 92.10
 SCREENED INTERVAL: 160-170, 190-195
 WELL VOLUME: 60.23 (3) = 180.70 / 5 = 36.14

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	37	74	111	148	185	
	7.52	7.50	7.48	7.46	7.52	
°F	76.4	76.5	76.6	76.6	76.5	
	1334	1364	1385	1381	1375	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/19/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-091917-PG-32
 SAMPLE TIME: L> 1335

WELL INFORMATION

WELL NUMBER: NW06-D
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1096.92ft.
 STATIC WATER DEPTH: 103.70 ELEVATION: _____
 BOTTOM DEPTH: 201.5 ELEVATION: _____
 WATER COLUMN LENGTH: 97.8
 SCREENED INTERVAL: 181.5-201.5
 WELL VOLUME: ~~47.8~~ 63.96 (3) = 191.88 / 5 = 38.37 FL

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	40	80	120	160	200	
	7.34	7.24	7.28	7.24	7.17	
of	82.7	81.4	80.5	81.0	79.7	
	1700	1671	1694	1679	1651	

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130

DATE OF WELL DEVELOPMENT: 9/19/17

DEVELOPMENT CREW MEMBERS: PG, DH

PURGING METHOD: 3" Submersible

SAMPLE NO.: GW-091917-PG-33 GW-091917-PG-34

SAMPLE TIME: L → 1425 L → 1510

(RINSE BLANK)

WELL INFORMATION

WELL NUMBER: NW18-S

WELL TYPE (diameter/material): 4" / steel

MEASURING POINT ELEVATION: 1094.78 ft.

STATIC WATER DEPTH: 102.90 ELEVATION: _____

BOTTOM DEPTH: 130.5 ft. ELEVATION: _____

WATER COLUMN LENGTH: 27.60

SCREENED INTERVAL: 90-130 ft.

WELL VOLUME: 18.05 (3) = 54.15 / 5 10.83

FLOW ≈ 2 GPM

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
1 meter = 2 liters

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	11	22	33	44	55	
	7.30	7.23	7.28	7.26	7.34	
°F	83.8	82.9	81.7	81.1	81.0	
	1353	1318	1330	1338	1332	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/19/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: ~~GW-091917~~ 1540 → COLLECT GW-091917-PG-35
 SAMPLE TIME: (GRAB - BAILER)

WELL INFORMATION

WELL NUMBER: NW06-S
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1096.82ft.
 STATIC WATER DEPTH: 103.60 ELEVATION: _____
 BOTTOM DEPTH: 130 ELEVATION: _____
 WATER COLUMN LENGTH: 26.40
 SCREENED INTERVAL: 89.5-129.5
 WELL VOLUME: $17.26 (3) = 51.79/5$ FLOW ≈ 1.2 GPM

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
		BAILER READING				
Gal	11	22	33	44	55	
	8.74	7.34				
°F	83.4	80.7				
	1105	1294				
	CLEAR					
	CLEAR					
	NONE					

1120

WELL PRY @ 20 GAL

1530

DTW: 104.3

WELL > 80% RECOVERED

GRAB SAMPLE w/ BAILER

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: ~~8/21/17~~ 9/20/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092017-PG-36
 SAMPLE TIME: L > 0950

WELL INFORMATION

WELL NUMBER: NW19-D
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1100.50 ft.
 STATIC WATER DEPTH: 104.01 ELEVATION: _____
 BOTTOM DEPTH: 220.5 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 116.49
 SCREENED INTERVAL: 205-220.5 ft.
 WELL VOLUME: 76.18 (3) = 228.55 / 5
 45.71

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	45	90	135	180	225	
	7.70	7.53	7.47	7.46	7.45	
°F	78.3	78.7	78.5	78.8	78.3	
	1150	1182	1186	1184	1185	
	Clear					
	Clear					
	None					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/20/17
DEVELOPMENT CREW MEMBERS: PG, DHT
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-092017-PG-37
SAMPLE TIME: ↳ 1155

WELL INFORMATION

WELL NUMBER: NW22-S
WELL TYPE (diameter/material): 4" /PVC
MEASURING POINT ELEVATION: 1101.65
STATIC WATER DEPTH: 101.40 **ELEVATION:** _____
BOTTOM DEPTH: 130 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 28.60
SCREENED INTERVAL: 95-130
WELL VOLUME: 18.70 (3) = 56.11 / 5

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

11.22

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	12	24	36	48	60	
	7.10	7.2	7.3	7.26	7.29	
°F	84.6	81.5	80.3	80.7	79.8	
	1744	1766	1769	1765	1790	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/20/17 + 9/21/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092117-PG-38
 SAMPLE TIME: L- 0710

WELL INFORMATION

WELL NUMBER: NW08-M
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1098.65ft
 STATIC WATER DEPTH: 102.05 ELEVATION: _____
 BOTTOM DEPTH: 202 ELEVATION: _____
 WATER COLUMN LENGTH: 99.95
 SCREENED INTERVAL: 175-195
 WELL VOLUME: 65.367 (3) = 196.10 / 5 = 39.22
 FLOW 25 GPM
 WL ↓

Note: For 4-inch diameter well: 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
			PURGE 50 GAL POST RECOVERY			
Gal	40	80	120	160	200	
	8.84	8.69	7.62			
°F	83.0	84.4	77.6			
	1181	1161	1352			
	CLEAR					
	CLEAR					
	NONE					

WELL DRY @ 80 GAL
 9/21/17 @ 0650 DTW: 103.65 WELL > 80% RECOVERED
 WILL COLLECT SAMPLE w/ PUMP FROM SCREEN

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT No.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/21/17
 DEVELOPMENT CREW MEMBERS: PG, OH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092117-PG-39, GW-092117-PG-40
 SAMPLE TIME: L → 0825 L → 0840
(FIELD BLANK)

WELL INFORMATION

WELL NUMBER: NW03
 WELL TYPE (diameter/material): 4" / pvc
 MEASURING POINT ELEVATION: 1097.16 ft.
 STATIC WATER DEPTH: 103.35 ELEVATION: _____
 BOTTOM DEPTH: 140 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 39.22
 SCREENED INTERVAL: 120-140 ft.
 WELL VOLUME: 25.65 (3) = 76.95 / 5

Note: For 4-inch diameter well:

1 foot = 0.66 gallons (us)
 1 meter = 2 liters

= 15.39

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	16	32	48	64	80	
	7.19	7.30	7.20	7.11	7.32	
of	79.1	78.6	78.6	78.9	78.2	
	1376	1391	1394	1385	1400	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2
 DATE OF WELL DEVELOPMENT: 9/21/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092117-PG-41
 SAMPLE TIME: L> 1010
 (MS/MSD)

PROJECT NO.: 013932-130

WELL INFORMATION

WELL NUMBER: NW17-S
 WELL TYPE (diameter/material): 4" / steel
 MEASURING POINT ELEVATION: 1096.75 ft
 STATIC WATER DEPTH: 104.20
 BOTTOM DEPTH: 145.5 ft.
 WATER COLUMN LENGTH: 41.30
 SCREENED INTERVAL: 130-145 ft.
 WELL VOLUME: 27.01 (3) = 81.03 / 5

ELEVATION: _____

ELEVATION: _____

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

= 16.20

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	18	36	54	72	90	
	7.16	7.20	7.22	7.19	7.23	
°F	79.2	78.9	79.0	78.8	78.4	
	2047	2100	2096	2103	2090	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/21/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092117-PG-42, GW-092117-PG-43
 SAMPLE TIME: L → 1215, L → 1220 (DUP)

WELL INFORMATION

WELL NUMBER: NW24-S
 WELL TYPE (diameter/material): 4" /PVC
 MEASURING POINT ELEVATION: 1118.56
 STATIC WATER DEPTH: 78.35 ELEVATION: _____
 BOTTOM DEPTH: 97 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 18.65
 SCREENED INTERVAL: 77-97
 WELL VOLUME: 12.197 (3) = 36.59 = 7.3

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1^{of}):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
	7.45	7.40	7.35	7.44	7.40	
of	81.6	80.9	79.9	79.9	79.8	
	1860	1815	1825	1800	1806	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT NO.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/21/17
 DEVELOPMENT CREW MEMBERS: PG, DH
 PURGING METHOD: 3" Submersible
 SAMPLE NO.: GW-092117-PG-44
 SAMPLE TIME: 1330

WELL INFORMATION

WELL NUMBER: EW03
 WELL TYPE (diameter/material): 4" /PVC/ SS Screen
 MEASURING POINT ELEVATION: 1114.60 ft.
 STATIC WATER DEPTH: 75.00 ELEVATION: _____
 BOTTOM DEPTH: 110 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 35
 SCREENED INTERVAL: _____
 WELL VOLUME: $22.89 (3) = 68.67 / 5 = 13.734$

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	14	28	42	56	70	
	7.39	7.19	7.32	7.28	7.58	
°F	80.8	80.5	79.6	79.8	79.1	
	1589	1530	1536	1542	1540	
	SL result					
	ORANGE					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/22/17
DEVELOPMENT CREW MEMBERS: PG, DH
PURGING METHOD: 3" Submersible
SAMPLE NO.: GW-092217-PG-45 | GW-092217-PG-46
SAMPLE TIME: L → 0645 | L → 0735
 (R.B.)

WELL INFORMATION

WELL NUMBER: NW24-D
WELL TYPE (diameter/material): 4" /PVC
MEASURING POINT ELEVATION: 1118.48
STATIC WATER DEPTH: 78.30 **ELEVATION:** _____
BOTTOM DEPTH: 155 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 76.70
SCREENED INTERVAL: 135-155
WELL VOLUME: 50.16 (3) = 150.48 / 5 = 30

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	30	60	90	120	150	
	7.40	7.13	7.20	7.23	7.20	
°F	76.2	76.5	76.3	76.2	75.9	
	1673	1693	1706	1698	1705	
	CLEAR					
	CLEAR					
	NONE					

74.9

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT No.: 013932-130

DATE OF WELL DEVELOPMENT: 9/22/17

DEVELOPMENT CREW MEMBERS: PG, DH

PURGING METHOD: Dedicated Pump 3" GRUNFOS

SAMPLE NO.: GW-092217-PG-47 GW-092217-PG-48

SAMPLE TIME: → 0915 → 0950

(FIELD BLANK)

WELL INFORMATION

WELL NUMBER: DM509

WELL TYPE (diameter/material): 4" / PVC/SS Screen

MEASURING POINT ELEVATION: 1114.06 ft.

STATIC WATER DEPTH: 74.80 ELEVATION: _____

BOTTOM DEPTH: 215 ft. 175 ELEVATION: _____

WATER COLUMN LENGTH: 100.20

SCREENED INTERVAL: _____

WELL VOLUME: 65.53(3) = 196.59/5

= 39.318

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
1 meter = 2 liters

TIME

VOLUME PURGED
(volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	40	80	120	160	200	
	7.22	7.02	7.25	7.34	7.40	
°F	77.8	77.9	78.8	78.2	78.5	
	1483	1499	1502	1513	1507	
	CLEAR					
	CLEAR					
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 PROJECT No.: 013932-130
 DATE OF WELL DEVELOPMENT: 9/25/17
 DEVELOPMENT CREW MEMBERS: PG
 PURGING METHOD: 2" Submersible
 SAMPLE NO.: AW-092517-PG-49 , GW-092517-PG-50
 SAMPLE TIME: LP 0840 LP 1015
(RINSE BLANK)

WELL INFORMATION

WELL NUMBER: NW13-M
 WELL TYPE (diameter/material): 2" / PVC
 MEASURING POINT ELEVATION: 1096.67 ft.
 STATIC WATER DEPTH: 103.92 ELEVATION: _____
 BOTTOM DEPTH: 195 ft. ELEVATION: _____
 WATER COLUMN LENGTH: 91.08
 SCREENED INTERVAL: 175-195 ft.
 WELL VOLUME: 14.93 (3) = 44.811 / 5

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

= 8.96

TIME

VOLUME PURGED
 (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
	7.24	7.21	7.18	7.16	7.21	
°F	78.9	79.7	79.8	79.9	80.4	
	1138	1133	1138	1139	1124	
	SL. CLOUDY		CLEAR			
	BROWN		CLEAR			
	NONE		NONE			

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT NO.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/25/17
DEVELOPMENT CREW MEMBERS: PG
PURGING METHOD: 2" Submersible RENTAL
SAMPLE NO.: GW- 092517- PG- 51
SAMPLE TIME: L 1330

WELL INFORMATION

WELL NUMBER: NW14-M
WELL TYPE (diameter/material): 2" / PVC
MEASURING POINT ELEVATION: 1096.11 ft.
STATIC WATER DEPTH: 103.18 **ELEVATION:** _____
BOTTOM DEPTH: 195 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 91.82
SCREENED INTERVAL: 175-195 ft.
WELL VOLUME: 15.05 (3) = 45.175 / 5
-9.03

Note: For 4-inch diameter well: 1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/-0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	10	20	30	40	50	
	7.10	7.10	7.11	7.14	7.15	
of	81.4	80.9	80.9	81.2	80.9	
	1222	1232	1221	1217	1218	
	SL. CLOUDY		CLEAR			
	LIGHT ORANGE		CLEAR			
	NONE					

WELL DEVELOPMENT AND STABILIZATION FORM

PROJECT NAME: 52nd Street OU2 **PROJECT No.:** 013932-130
DATE OF WELL DEVELOPMENT: 9/26/17
DEVELOPMENT CREW MEMBERS: PG
PURGING METHOD: 2" Submersible
SAMPLE NO.: GW-092517-PG-52 ~~GW-092517-PG-53~~
SAMPLE TIME: → 0830 ~~0830~~

WELL INFORMATION

WELL NUMBER: NW13-D
WELL TYPE (diameter/material): 2" / PVC
MEASURING POINT ELEVATION: 1096.61 ft.
STATIC WATER DEPTH: 103.96 **ELEVATION:** _____
BOTTOM DEPTH: 235 ft. **ELEVATION:** _____
WATER COLUMN LENGTH: 131.04
SCREENED INTERVAL: 215-235 ft.
WELL VOLUME: 21.49 (3) = 64.47/5
12.89

Note: For 4-inch diameter well:

1 foot = 1 foot = 0.66 gallons (us)
 1 meter = 2 liters

TIME

VOLUME PURGED (volume/total volume):

FIELD pH (+/- 0.2):

FIELD TEMPERATURE (+/- 1°F):

FIELD CONDUCTIVITY (+/- 15%):

OXIDATION REDUCTION POTENTIAL

DISSOLVED OXYGEN

TURBIDITY

CLARITY:

COLOR:

ODOR:

NOTES:

UNITS	1	2	3	4	5	TOTAL/ AVERAGE
Gal	13	26	39	52	65	
	7.52	7.36	7.38	7.34		
°F	76.0	77.9	77.7	77.9		
	1197	1169	1170	1162		
	SL. CLOUDY		CLEAR			
	BROWN		CLEAR			
	NONE					